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to the testimony of Mr. Watson, Bell's assistant, a witness called and examined by the complainants in this case, who testified that the first spoken speech ever heard and understood through Bell's telephone, so far as he knows, was on or about the 10th day of March, 1876; in view of these facts, I would like to know where, and in what publication, you read the account that you speak of?

Ans. Assuming the statements made to be facts, I still say that I believe I read about telephones during the year 1875, but am not positive as to the time or the inventor's names.

Re-cross-Q. 359. State to the best of your recollection what you read about telephones in the year 1875.

Ans. I cannot remember any further than that it was a general history of its conception and practical uses.

Re-cross Q. 360. Give the history so far as you remember it.

Ans. To the best of my recollection it was that the instrument was in course of construction, and if successful, would revolutionize the method of transmitting messages.

Re-Cross-Q. 361. Did it describe the instrument. If so, state all of the description that you can remember.

Ans. It did not.

Re-Cross-Q. 362. In what publication did you see that article that you have referred to?

Ans. I think it was the *Scientific American*, but am not positive, as I read a number of mechanical journals and daily newspapers in which it might have been published; I am unable to give the particular one.

Re-C oss-Q. 363. Where were you when you first read that article?

Ans. I think I was at my home in Mechanicsburg.

Re Cross-Q. 364. The complainants have taken great pains to collect and put in evidence in this case all of the earliest known printed publications respecting the Bell telephone, but so far as I am aware, they have found no printed publication of an earlier date than the summer of 1876 during the Centennial Exposition; do you swear positively that you saw such publication prior to that time?

Ans. I did not, or do not.

Re-cross-Q. 365. Assuming, for the purposes of this interrogatory that Alexander Graham Bell's patent of March 7, 1876, was the first patent or printed publication which gave knowledge of his inventions to the world, and that whatever knowledge could be had of them, prior to the date of that patent, was confined to Mr. Bell himself and a few of

his friends and employés, then, in that case, it would be impossible for others—strangers—hundreds of miles away from him to be imitating his inventions prior to the date of his patent, would it not?

Ans. It would.

Re-cross-Q. 366. And under the circumstances stated, if it should be proved here in this case that Daniel Drawbaugh, prior to the date of Bell's first patent, actually had invented and made an electric speaking telephone, would you say that such invention of Drawbaugh was a mere imitation or a great and original invention?

Ans. While I doubt the truth of the statement that Mr. Drawbaugh invented and constructed a telephone prior to March, 1876, I would say that if he did, it is still not conclusive evidence to my mind that he was the originator of it.

Re-cross-Q. 367. I am curious to ascertain what would be conclusive evidence that he was the original inventor of it under the circumstances stated to a mind disposed towards him as yours is. Will you please state why you would not regard such evidence as conclusive of his originality?

Ans. Because on several occasions he has intimated to me that he was the inventor of machines or appliances which I afterwards learned were mere modifications of others which he had saw. I would only regard his original invention of anything as conclusive after being satisfied that I had not heard of it before, and could find no counter-part made or constructed before or simultaneous with his.

Re-cross-Q. 368. Name all the machines of which he ever claimed to you to be the inventor, and which you learned afterwards to be mere modifications of prior machines, with the single exception of the faucet invention which was in controversy in the interference, and as to which I do not ask any statement from you.

Ans. I will name the hydraulic ram, the automatic boiler-feeder, the carpet-rag needle, and the steam syphon or pump.

Re-cross-Q. 369. Did you not know from boyhood that the hydraulic ram had been known and used throughout the civilized world before either you or Mr. Drawbaugh were born, and do you not know that he never claimed to have invented it, but only an improvement upon it?

Ans. The former part of the interrogatory I can answer, yes, and to the latter portion: he left me under the impression that he had invented useful improvements, which I afterwards doubted, from the fact that

the only ram of his construction I knew to be in use did not work as well or give as good satisfaction as others of prior construction.

Re-cross-Q. 368. What ram was that, and who had it in use? I refer to Drawbaugh's ram.

Ans. The one in use on the farm of William Stephens.

Re-cross-Q. 369. State where that farm is, and at what time it was in use there.

Ans. About a mile or a mile and a half north-east of Shiremanstown. It was in use at that place during the time I was operating at Eberly's Mills, as I remember of John Stephens, who lived on the place, coming there, at least twice, to get Mr. Drawbaugh to repair it.

Re-cross-Q. 370. Is that ram still in use on the Stephens farm?

Ans. I do not know.

Re-Cross-Q. 371. Then, so far as you know, it never was removed?

Ans. It was not, to my knowledge.

Re-cross-Q. 372. Was there any other ram used on that farm to do the same work prior to Drawbaugh's ram being put in there on the Stephens' place?

Ans. I was not so informed.

Re cross-Q. 373. How do you know, then, that any ram of prior construction, if put in there to do the same work under the same conditions, would have operated any better than Drawbaugh's, or would not have needed repairs as often or oftener?

Ans. While I cannot assert that any other ram would give better satisfaction in the same locality and under the same circumstances, I know of a ram which I saw in operation prior to the time of seeing this one, under circumstances nearly the same, which the gentleman who was using it informed me had not cost him anything for repairs or needed repairing for five or six years.

Re-Cross-Q. 374. All that might be true and yet your assumption not be true. Do you not know that the efficiency of a hydraulic ram depends upon the sufficiency, the regularity, the clearness from sediment, and the height or head of the water supply to it, and upon the care which is taken of it. in keeping it protected from obstructions, from accidental injuries, and from frost and ice?

Ans. I am fully aware of those facts, and considered them when I stated that the two rams were working under nearly similar circumstances.

Re-Cross-Q. 375. I suppose, then, that you had personal knowledge

of the care that was taken of those two rams, and that possibly you stayed by them both and watched them several years, to see that your information was correct; did you?

Ans. I made my estimate of the care taken of them by observation of the appearance and surroundings of both, and I did not watch either of them for years, months, or even days; I suppose I spent about an hour in examining either of them.

Re-Cross-Q. 376. Recurring now to the subject of my 367th interrogatory from which we have digressed, I wish to ask you whether or not, assuming that no knowledge of any electric speaking telephone invention had ever been communicated to the public prior to March, 1876, but that sometime prior to that date Daniel Drawbaugh had invented and constructed an electric speaking telephone, would you regard his said invention in that case as a mere imitation or as a great and original invention?

Ans. Under the circumstances named I would regard it as an original invention, if I were satisfied that he had not saw or read of it before producing it.

Re-cross-Q. 377. And under the conditions stated in your answer, would you also regard it as a great invention as well as an original one with your present knowledge of the great practical utility of speaking telephones?

Ans. I certainly would.

Re-cross-Q. 378. Assuming, now, that up to the 7th day of March, 1876, Daniel Drawbaugh had no knowledge of an electric speaking telephone, invented, made, or described by others; and assuming it to be true that about the 1st of February, 1876, Daniel A. Hamacher, a school-teacher, near Eberly's Mills, went with a large number of his scholars to Mr. Drawbaugh's shop, and then and there saw electric speaking telephones; and assuming it to be true that even prior to the 1st day of February, 1876, a great number of other witnesses, who have been examined in this case, personally saw, and many of them talked through, and heard others talk through the electric speaking telephone at Mr. Drawbaugh's shop; and that Drawbaugh always claimed the invention at those times to be his invention, and frequently said it would supersede the telegraph, and would convey speech to great distances by electricity; assuming, I say, these things to be true, then, in that case, would you regard him as a mere imitator, so far as his telephone invention was concerned, or not?

Ans. Without accepting the truth of the statements of the parties named in preference to my own observations and recollections, I would say that, if these statements are correct, I would admit that Daniel Drawbaugh was an original inventor, and not a mere imitator, in the construction of an electric speaking telephone.

Re-cross-Q. 379. You have referred in your direct examination answers 323 to 325 to the sale of a drill-press and engine-lathe to E. W. Chellis, of Harrisburg; will you state when the engine-lathe was sold to Mr. Chellis?

Ans. I think sometime during the year 1880.

Re cross-Q. 380. Approximate the date as closely as you can.

Ans. I believe it was between July and October of that year; that is, between the first of July and the last of October.

Re-cross-Q. 381. Was your interview with Mr. Chellis, referred to n your 325th answer, before or after you saw Mr. Weeks?

Ans. It was after.

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me, this 14th day of December, 1882.

FRED. M. OTT,
Examiner.

D. A. HAUCK.

Complainants counsel refers to the book of testimony on behalf of David A. Hauck in the faucet interference case, which was produced, described and spoken of in the 300th and 301st cross interrogatories and answers of David A. Hauck, page 827 supra, and now puts in evidence all of that pamphlet not heretofore put in evidence by the respective parties:

Respondents counsel objects to the book and the depositions printed in it as not competent evidence in this case, said depositions having been taken between other parties and upon another issue with respect to an invention not here in controversy.

For convenience, the whole of said pamphlet will be printed together in complainants volume of Exhibits, page 239, et seq.

Recess for lunch until 2.15, P. M.

DEC. 14, 1882, 2.15, P. M.

Examination resumed pursuant to adjournment.

Present, same counsel.

DAVIS MAJOR, *being produced, sworn, and examined, saith:*

Examined by M'. Storrow:

Q. 1. State your age, residence, and occupation.

Ans. My age is fifty years. Residence, Silver Spring, about a mile and a half from Mechanicsburg, Cumberland county, Pa. Occupation, machinist.

Q. 2. About how long have you lived in the neighborhood of Mechanicsburg?

Ans. I have been living in the neighborhood somewheres about fourteen years.

Q. 3. Did you ever work for Mr. David A. Hauck at the shop of Daniel Drawbaugh at Eberly's Mills?

Ans. Yes, sir.

Q. 4. When was it?

Ans. In 1874.

Q. 5. What part of 1874?

Ans. It was along in the spring; I can't tell you exactly what time, but it was late in the spring.

Q. 6. How long did you work there at that time?

Ans. I worked there somewheres about a month, as near as I can tell.

Q. 7. Where were you living then?

Ans. At Silver Spring.

Q. 8. What work did you do for Mr. Hauck at Drawbaugh's shop in the spring of 1874?

Ans. I bored out chambers for molasses faucets.

Q. 9. Who else worked in the shop on faucets at the time?

Ans. Squire Drawbaugh and his son and David Hauck.

Q. 10. Was there a young fellow by the name of Nichols worked there?

Ans. Not as I can recollect.

Q. 11. Whereabouts did Squire Drawbaugh and his son work—in what part of the shop?

Ans. They worked on the first floor

Q. 12. What floor did you work on?

Ans. I worked on the first floor.

Q. 13. How many floors or stories were there to that shop?

Ans. There was two stories and a basement.

Q. 14. Where were the strainers made for the faucets?

Ans. I never seen them made, and I couldn't say.

Q. 15. Were they made on the floor that you worked on?

Ans. No, sir.

Q. 16. Were the wooden handles turned on the floor that you worked on?

Ans. No, sir.

Q. 17. Did you ever go down to the basement, and what was there, if you remember?

Ans. I was down in the basement; there was a water-wheel and a nail-machine there, and a lot of rubbish and stuff.

Q. 18. Was the nail-machine operating?

Ans. No, sir.

Q. 19. Did you ever go up into the story above the one where you regularly worked?

Ans. Yes, sir; I was up.

Q. 20. Was it all one room, or was it partitioned off any?

Ans. There was one room partitioned off, that I know of.

Q. 21. Was that a large room or a small room that was partitioned off?

Ans. It was a small room.

Q. 22. Did you ever go into it?

Ans. I was in it once.

Q. 23. Whom did you go in with, or who invited you in?

Ans. I went in with Mr. Drawbaugh.

Q. 24. If he showed you anything in that room which he gave you to understand he had made or invented, please to state what it was.

Ans. There was a clock there, and two small batteries, with wires attached to it.

Q. 25. What sort of a clock was it—what kind of a looking thing?

Ans. It was a clock without a case. It was hanging against the wall.

Q. 26. Did he ever show you any talking machines while you worked there in the shop?

Ans. No, sir.

Q. 27. Did he ever tell you, while you worked there at the shop,

that he had a talking machine, by means of which a person could talk from one place to another through the use of electricity?

Ans. No, sir.

Q. 28. Please look at the instruments now on the table marked "F," "B," "C," "I," "A," "D," and "E" and tell me whether you ever saw any of them, or any instruments substantially like them at Daniel Drawbaugh's shop?

Ans. No, sir; I never seen anything like them there.

Q. 29. After you quit working for Mr. David Hauck at Drawbaugh's shop in the spring of 1874, when did you next go to Mr. Drawbaugh's shop, and for what purpose, and with whom?

Ans. I was down there, as near as I can tell, about three months after that, for a small iron lathe that I had got the loan of from David Hauck; he went along down there with me.

Q. 30. Did you stay there long at that time? And what did you do there besides loading up the lathe and hauling it away?

Ans. We just took the lathe apart and loaded it up and started for home.

Q. 31. Did you go up-stairs on to the upper story, during that visit when you went for the lathe?

Ans. That I can't recollect whether it was that time, or whether I went down afterwards; that I can't tell you; I won't be positive about that.

Q. 32. Have you ever been at Drawbaugh's shop since the time when you went for the lathe; and if so, what did you go for, and when was it?

Ans. I was down this spring, (1882.) I went down for a Mr. Seidel for a hydraulic jack that he was getting the loan of from Mr. Drawbaugh. One of Seidel's men was with me named Hinkle; his first name I don't know.

Q. 33. While you worked for Mr. Hauck at Drawbaugh's shop did Squire J. B. Drawbaugh or his son ever tell you that Drawbaugh had a talking machine there?

Ans. No, sir.

Q. 34. Do you remember whether Daniel Drawbaugh ever lived at Mechanicsburg after you had worked at his shop?

Ans. He lived there for a year, as near as I can tell you.

Q. 35. Did you use to see him while he lived there or not?

Ans. I have seen him in Mechanicsburg.

Q. 36. Has he ever been at your shop or house since you quit working at Milltown?

Ans. He was at my shop once.

Q. 37. Did he come on business or for a social call, and where was your shop then?

Ans. I was carrying on then at Trindle Spring. He just stopped in as he was going along. He had no business. Trindle Spring is about a mile and a half from Mechanicsburg.

Cross-examined by Mr. Hill:

Cross-Q. 38. For whom did you work immediately before you went to work at Drawbaugh's shop in the spring of 1874?

Ans. Before I went there, I was working around among the farmers, and around home.

Cross-Q. 39. For whom did you work immediately after you stopped working at Drawbaugh's shop in the spring of 1874?

Ans. I can't draw it to my memory now exactly.

Cross-Q. 40. You haven't a very reliable memory of events several years ago, have you?

Ans. What I have been doing, do you mean?

Cross-Q. 41. Of things generally—of events.

Ans. No, I hain't.

Cross-Q. 42. Whom do you think you may have worked for immediately after you stopped working at Drawbaugh shop?

Ans. In my trade I worked for David Hauck—at my trade.

Cross-Q. 43. In your 31st answer you say you can't remember whether you went up stairs at the time you got the lathe, or whether you went down afterwards. Did you mean that you can't remember whether you went up stairs at the time you got the lathe, or whether it was in the spring of 1882, when you went down for Mr. Seidel?

Ans. I can't tell you when that was, but it was not last spring that I was up. I can't tell you the time I was up, but it was not in last spring.

Cross-Q. 44. You have stated that while you were at work there for Mr. Hauck, you once were up stairs and went into a room with Mr. Drawbaugh where you saw a clock and some batteries. Do you remember what else you saw there at time time?

Ans. I don't recollect of anything. I will say that there was rubbish and stuff in the room, but what they were I don't know.

Cross-Q. 45. While you were working there for Mr. Hauck, was Daniel Drawbaugh working on the second floor of the building?

Ans. Yes, sir.

Cross-Q. 46. I suppose you don't know what he was doing there, do you?

Ans. No, sir.

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me, this 14th day of December, 1882.

FRED. M. OTT,
Examiner.

DAVIS MAJOR.

EDWARD NICHOLS, *being produced, sworn, and examined, saith:*

Examined by Mr. Storrow:

Q. 1. State your age, residence, and occupation.

Ans. My age is twenty-four; residence, Bridgeport, Cumberland county, Penna.; occupation, helper at a puddling furnace.

Q. 2. One of the witnesses for the defendants, whose deposition is found on page 238 of the defendants' printed record, states that his name is Samuel Nichols, that he is about fifty two years old, lives at White Hill, has lived there since March, 1868, and had a son-in-law, Samuel Bruce; do you know that Mr. Nichols, and what relation is he of yours?

Ans. He is my father.

Q. 3. What is your father's occupation, and what has it been for ten or eleven years past?

Ans. An engineer.

Q. 4. Where has he worked, and what has his work been?

Ans. He has been an engineer at the Chesapeake Nail Works running a stationary engine there for the last ten or twelve years.

Q. 5. Is he at work there now in that capacity?

Ans. He is.

Q. 6. About what pay does he get a month?

Ans. As near as I can tell thirty-three dollars a month.

Q. 7. Did you ever work for Mr. David A. Hauck at Daniel Drawbaugh's shop, at Eberly's Mills?

Ans. I did.

Q. 8. About how long?

Ans. Some two or three months, to the best of my knowledge.

Q. 9. It has appeared that Mr. David A. Hauck began active work there in July, 1873, and suspended active work in June or July, of 1874; did you work for him when he first began work there or during the latter part of the time before he suspended?

Ans. I worked there during the latter part of the time before he suspended.

Q. 10. Who worked there besides Mr. Hauck on the faucets?

Ans. Mr. John Drawbaugh; that is the squire—Mr. George Drawbaugh, a gentleman, I think, by the name of Mr. Mayers and myself.

Q. 11. What work did the person you call Mayers do, and where did he come from?

Ans. He was boring chambers for faucets, and he came from Mechanicsburg or near there.

Q. 12. What work did you do while you were there?

Ans. I was reaming handles, milling five points and centering them, turning two points and painting the faucets.

Q. 13. Who showed you how to do this work and to run the machines?

Ans. Squire Drawbaugh showed me, and Daniel often showed me, too, as he came through the room.

Q. 14. Had you ever worked in a machine shop before?

Ans. I had not.

Q. 15. Where did you do this work you have mentioned—on which story?

Ans. On the lower story.

Q. 16. Did you ever go upstairs into the story above it?

Ans. I did pretty often. I often would eat my meals up there.

Q. 17. Was the upstairs part all in one room, or was it partitioned off any?

Ans. It was partitioned off into three different rooms. The northwest portion of the room was partitioned off into two smaller rooms, making three different sized rooms.

Q. 18. Did you ever go into either of those smaller rooms?

Ans. I did; into both of them.

Q. 19. Did you ever see Mr. Daniel Drawbaugh at work in either of them?

Ans. I did.

Q. 20. Name some of the things you have seen him at work on in either of those rooms.

Ans. He was working on a call-bell for hotels and an instrument for telegraphing without batteries. Those were the most important things I have seen him at work on.

Q. 21. Name some of the other things which you remember to have seen at his shop upstairs, and which you understand to be of his making or invention.

Ans. I saw a weather barometer and a machine—I don't know what would be the correct name of it—for counting the bushels of grain as you would draw it from a bin, and an old English clock—one of those tall clocks—and I have a faint recollection of a clock without a face hanging against the wall. There was a sort of pump for pumping water gotten up on the same plan as his faucet, and I saw a patent self-feeding nail-machine, but that was down below in the basement, and a machine with a steel die for cutting carpet-rag knotters; I believe that is all that I recollect.

Q. 22. Do you remember of his having a machine to insulate wire by wrapping thread around it?

Ans. I have a faint recollection of it.

Q. 23. You have spoken of a call-ball for hotels; do you remember whether that was to be worked by electricity or not?

Ans. It was to be worked by magnetism, I believe.

Q. 24. Did you ever hear him ring the bell, and were there more than one of them?

Ans. I heard them ring bells; I don't know how many there was; I know there was two, but don't know whether there was any more or not.

Q. 25. Did they ring both at once, or did he ring whichever one he pleased without ringing the other?

Ans. He rang whichever one he pleased without ringing the other.

Q. 26. Do you know how he did it—to ring one and not the other?

Ans. By changing the wire; the one he wanted to ring he would fasten to the wire connected with the post. He had a post with a hole in it, and a set screw in it. Whichever one he wanted to ring he would fasten the wire that was attached to the bell to the post.

Q. 27. Was this post and screw on the bell, or on some other instrument?

Ans. It was on a board where the bell and the insulated wire was on.

Q. 28. Was there any clock down in the room where you worked where the principal iron machinery was?

Ans. There was an old chain clock.

Q. 29. What do you mean by a chain clock?

Ans. It was wound by pulling the chain, as near as I can tell.

Q. 30. Where did you live while you worked at Mr. Drawbaugh's shop?

Ans. I lived at home with my father at White Hill, between three quarters and a mile from Drawbaugh's shop.

Q. 31. Had you known Daniel Drawbaugh, or ever been at his shop, before you went to work for David Hauck?

Ans. I had known him, but I don't remember whether I was ever in his shop, or not, before.

Q. 32. When were you married, and where did you move to then?

Ans. I was married April 28, 1878, and moved to West Fairview in the fall of 1878.

Q. 33. Where were you living and working between the time when you were married, in the spring of 1878, and the time when you moved to West Fairview?

Ans. I was working in the locality of my home among the farmers, and was living with my father.

Q. 34. Where did you work at West Fairview?

Ans. I worked at McCormick's rolling-mill.

Q. 35. When did you move away from West Fairview, and where did you go to then?

Ans. I moved to Scottdale, Westmoreland county; that is, I went to work there January 11th, 1881, and moved my family in the latter part of February.

Q. 36. When did you move away from Scottdale, and where did you go to then?

Ans. I left working there the latter part of March, 1882, and moved my family away near the first of May, 1882; I moved to Oyster's Point, right above Camp Hill, Cumberland county.

Q. 37. Between the time when you quit working for Mr. Hauck in the summer of 1874 and the time when you got married in the spring of 1878, where did you live?

Ans. I lived at home with my father at White Hill; part of the time

I was in the west. In 1875, in the spring some time—I don't know what month it was—I went to Iowa and stayed four months, and in the fall of 1876 I went to Michigan and stayed six months, from fall till spring.

Q. 38. Between the time when you quit working for Hauck and the time when you were married did you ever go to Mr. Drawbaugh's shop; and if so, about how often?

Ans. I went there; I might have been there a dozen of times; I couldn't say just the number of times.

Q. 39. I wish you would mention some of the work which you saw going on at Drawbaugh's shop during any of the visits referred to in your last answer.

Ans. He was working on a new clock to run by magnetism, and a milling-machine for making wheels for clocks, and the patent axle; I saw them manufacture them; that is all.

Q. 40. Did you see anybody else working on clocks besides Daniel Drawbaugh?

Ans. George Drawbaugh was making part of the frame.

Q. 41. Do you remember what year it was when you saw George Drawbaugh working on clock frames?

Ans. I don't remember the year.

Q. 42. Did you ever see any talking machines at Daniel Drawbaugh's shop?

Ans. I did not.

Q. 43. Did anybody at Daniel Drawbaugh's shop ever tell you that he had a talking machine by which you could talk from one place to another through the use of electricity?

Ans. They did not.

Q. 44. While you were living at your father's house did you ever hear that Drawbaugh had such a machine?

Ans. I did not.

Q. 45. I now show you the instruments marked "F," "B," "C," "I," "A," "D," "E," "G," "O," "M," "N," "Q," "H," "&" "J," and ask you whether you ever saw any of these at Mr. Drawbaugh's shop, or any machines substantially like them?

Ans. I did not, to the best of my knowledge.

Q. 46. Did you ever see a machine like "C reproduced" at Mr. Drawbaugh's shop?

Ans. No, sir.

Adjourned until December 15th, 1882, at 10, A. M.

DECEMBER 15, 1882, 10, A. M.

Examination resumed, pursuant to adjournment.

Present, same counsel.

Examination of Edward Nichols, by Mr. Storrow, continued:

Q. 47. Do you think that Mr. Drawbaugh could have had a talking machine there and been in the habit of showing it to others while you worked at his shop and you not known of it or heard of it?

[*Objected to Mr. Hill as leading, hypothetical, and calling for mere opinion.*]

Ans. I do not.

Q. 48. If you had seen a talking machine at his shop or heard that he had one there while you worked there in 1874, do you think you would have forgotten it or not?

[*Objected to by Mr. Hill as leading and calling for mere opinion.*]

Ans. I think not.

Q. 49. While you were there working at his shop, did he or not seem to take much interest in you and about you?

Ans. He did.

Q. 50. Was he in the habit of showing things to you and explaining about things much? State generally what his disposition was towards you in that particular.

Ans. He often, as he passed through the shop that I was working in, would show me how to set the different tools and the best way to handle them; and would explain the different things he was making up-stairs, most especially the call-bell and the instrument for telegraphing without batteries.

Q. 51. You have testified that you went to Drawbaugh's shop something like a dozen times between the time when you did work for Mr. Hauck in the summer of 1874, and the time when you were married in the spring of 1878; what used to take you down there?

Ans. Sometimes I went fishing, as the Yellow Breeches creek runs right by the shop, and oftentimes, or several times, I went in just for a social chat, as we were good friends and I wished to have a talk.

Q. 52. When did Mr. Bruce marry your sister?

Ans. To the best of my knowledge, it was in the year 1875.

Q. 53. Were you present at the wedding?

Ans. I was not.

Cross-Q. 54. Where were you at the time?

Ans. In Iowa.

Q. 55. Had Mr. Bruce been married, and had he any children, at the time he married your sister?

Ans. He had been married, and had four children living. I don't know whether he had any dead, or not, by his first wife.

Q. 56. Where had he been living before he married your sister?

Ans. At Wormleysburg, Cumberland county.

Q. 57. About how far from your father's house?

Ans. About one mile and a half, as near as I know.

Q. 58. Did, or did not, your father object to his marriage with your sister?

Ans. He did object very strongly, through writing, to me while I was in the West.

Q. 59. For about how long before the marriage was Mr. Bruce calling on your sister?

Ans. Between two and three months, to the best of my knowledge, the way I was told.

[*Objected to by Mr. Hill, as hearsay.*]

Q. 60. Had he been in the habit of coming to your father's house, or were he and your father intimate, before he began calling on your sister, a few months previous to the marriage?

[*Objected to by Mr. Hill, as immaterial.*]

Ans. I don't know of him ever calling at our house before that, and I don't think they were intimately acquainted before he commenced calling on my sister.

Q. 61. Had his first wife been dead a great while, and about how long before he married your sister?

Ans. I don't know exactly how long, but I think two or three years.

Q. 62. Had you known him at all before he began calling on your sister?

Ans. I did.

Q. 63. About how big was the youngest of his children, by his first wife, at the time he married your sister?

Ans. I hardly understand the question right.

Q. 64. How big or how old?

Ans. From my own judgment I would think she was about five years old from the size of her.

Q. 65. I am informed that Mr. Bruce disappeared one night some years ago. What was his occupation at the time he disappeared, and what was generally supposed to have become of him at the time?

Ans. His occupation was watchman on the east end of the Cumberland Valley railroad bridge over the Susquehanna river at Harrisburg, and it was generally supposed that he had fallen off the bridge and drowned.

Q. 66. Has he ever been seen around home since?

Ans. He has not, that I know of.

Q. 67. Did your sister have a child born very shortly after he disappeared, and how old is the child?

Ans. She had a child born shortly after he disappeared; and, as near as I know, the child is close to three years old. He is either three years, or a little older.

Q. 68. When, and how, did you first learn that your testimony was sought by anybody in this case about telephones?

Ans. I learned first through correspondence with my father and sister that Mr. Daniel Drawbaugh was going to have me subpœnaed to appear, and tell what I knew about seeing telephones there—whether I saw them, or not—and the first I knew of being subpœnaed by the Bell Telephone Company was by J. C. Comfort meeting me on the road, as I was coming with a bucket of water from the well. He instructed me to come to Harrisburg in the evening, as he wanted to see me at the United States Hotel, Harrisburg, as he wanted to subpœna me to appear, and give testimony on the Bell telephone suit.

Q. 69. How long ago was it that Mr. Comfort met you on the road as you have stated?

Ans. Nine days ago.

Q. 70. Was that the first time that he had ever spoken to you on the subject of Mr. Drawbaugh or telephones, or had he spoken to you before that?

Ans That was the first time.

Q. 71. Where were you living at the time when your father and sister wrote about Mr. Drawbaugh wanting to subpœna you?

Ans. I was living in Scottdale, Westmoreland county, Pennsylvania.

Q. 72. I believe you have already testified that you lived there from the beginning of 1881 until early in 1882; is that the fact?

Ans. That is.

Q. 73. When did Mr. Drawbaugh first talk with you to inquire what you could testify to in this case, and where was it?

Ans. He met me in the streets of Harrisburg—on Market square to the best of my knowledge it was—in the fall of the year 1881, while on a visit home, and took me to Mr. Jacob's office in Harrisburg first, and we there had a short consultation about it with Mr. Jacobs, and from there to the "99 Cent Palace" on Third street, Harrisburg, and took me in the basement of the "99 Cent Palace" and showed me the instruments, to see whether I could remember of ever having seen any of them while I was working there or afterwards.

Q. 74. When he showed you the instruments what did you tell him about having seen them or not having seen them?

Ans. I told him that I was sorry to tell him that I had not seen them; that I had not the least bit of doubt that I hadn't seen them; I mean that I hadn't seen them.

Q. 75. By "99 Cent Palace" do you mean the 99-cent-store kept by Mr. Chellis?

Ans. I mean the 99-cent-store kept by Mr. Chellis.

Q. 76. Why were you sorry to tell him that you hadn't seen them?

Ans. Because he was an intimate friend of mine, and I would have liked to see it belong to him to have the right to manufacture, as he was a poor man like myself at that time.

Cross-examined by Mr. Hill:

Cross-Q. 77. Do you regard Daniel Drawbaugh as a very fine man, conscientious and truthful?

Ans. I do.

Cross-Q. 78. You do not believe that he would knowingly and intentionally misrepresent the facts concerning his telephone, however much it might be for his interest to do so, do you?

Ans. That is a hard question for me to answer.

Cross-Q. 79. Have you ever seen or known anything about him that would lead you to think that he would knowingly testify to an untruth?

Ans. I do not know anything.

Cross-Q. 80. You mean that you do not know anything that would lead you to think so, do you?

Ans. I do.

Cross-Q. 81. You have stated in your deposition that to the best of your recollection you never saw any telephones at Mr. Drawbaugh's

shop. Do you mean to swear positively that you never did see any, or that you do not recollect of seeing any?

Ans. I mean that I do not recollect of seeing any.

Cross-Q. 82. When you worked there for Mr. Hauck in 1874, you were a lad about seventeen years of age, were you not?

Ans. I was.

Cross-Q. 83. At that time I suppose you had no knowledge on the subject of electricity, had you?

Ans. Nothing but what Mr. Daniel Drawbaugh would tell me sometimes.

Cross-Q. 84. And from the character of your various occupations since I judge that you have acquired little or no knowledge on the subject of electricity or magnetism since, am I correct?

Ans. You are.

Cross-Q. 85. At that time, in 1874, you were a poor boy making his first effort to learn a trade, I suppose, were you not?

Ans. I was.

Cross-Q. 86. Will you please state all of the machines or instruments that you saw at Daniel Drawbaugh's shop in 1874, and that you understood to be of his invention?

Ans. I saw a call-bell to be used in hotels or private residences, an instrument for telegraphing without batteries, a barometer, a machine for keeping count of the number of bushels you draw from a bin of grain or anything, a self-feeding nail machine, a sort of pump on the principle of the faucet—made on that principle the work inside—a battering ram—I suppose that is the correct name—for forcing water up a hill from a valley. He had other inventions, though, that I didn't see—a couple that I know of.

Cross-Q. 87. Now please mention all the inventions that you remember of hearing, or understanding at that time that he had there, but which you did not see?

Ans. I have mentioned all but two—those are the stave jointer and stave cutter. I never saw them, although I understand that they were patents of his.

Cross-Q. 88. You saw also at that time a machine with a steel die for cutting carpet-rag knotters, a machine for insulating wire, and some clocks, did you not?

Ans. I saw a carpet-rag knotter, and I have a faint recollection of him having a machine for insulating wire. He used insulated wire, at

any rate. I saw two clocks in his apartment, that is, I saw an old English clock, and I have a faint recollection of seeing a clock without a face hanging up against the wall. I don't recollect much about that one, though, but I have a faint recollection of it.

Cross-Q. 89. In your 21st answer you say you saw a machine with a steel die for cutting carpet-rag knotters, and I now understand you to say that you saw a carpet-rag knotter. Do you mean that they were one machine or instrument, or that the carpet-rag knotter was one device and the machine for cutting carpet-rag knotters was a different device?

Ans. The carpet-rag knotter was one device. It was for knotting carpet-rags together, instead of sewing them; and the machine with a steel die was a different device, and was for manufacturing them.

Cross-Q. 90. Have you any recollection of seeing, or knowing anything about, a contrivance which was known as an earth battery, and which consisted of metal plates, buried in the ground outside of the shop, or in the cellar of the shop, and having wires running from the buried plates to any machine or instrument in the shop?

Ans I am only positive of one wire running out of the shop—out of the north-east corner of the building into the ground—and I was told that it was connected with the new clock that he had made. I don't know whether it had any plates or anything to the end of the wire that ran into the ground, or not. I didn't see him bury it. That was the only wire that I seen that ran out of the shop. I don't know of any being in the cellar or basement.

Cross-Q. 91. Did you see any insulated wires fastened up in the shop in 1874?

Ans. I think I did; I am not positive, though.

Cross-Q. 92. Referring to the wire which you saw running out of the north-east corner of the shop, and which you were told was connected with the clock he had made, did Daniel Drawbaugh ever explain to you what that wire was for, or tell you about the plates in the ground, or explain to you his electric or magnetic clock, so far as you remember?

Ans. He told me that wire was where he got the power from to run that magnetic clock, and he explained it to me, but I have forgotten what the explanation was. Of course I understood that those electric magnets had a good bit to do with it.

Cross-Q. 93. Now, please think carefully and tell me all the machines

or instruments of Daniel Drawbaugh's invention that you remember of his personally explaining to you in 1874.

Ans. He explained to me electricity, and he explained what the call-bell was to be used for; the principle of it was, of course, electrical magnets, with insulated wire wrapped on the coil; those are all that I can think of that were of any importance.

Cross-Q. 94. Then you have no recollection of his explaining to you the instrument for telegraphing without batteries, have you?

Ans. I have a recollection that he did; I thought I had mentioned that; I meant to.

Cross-Q. 95. You have no recollection of his explaining to you the weather barometer, have you?

Ans. No, sir.

Cross-Q. 96. You have no recollection of his explaining to you the machine for measuring the bushels of grain, as you would draw it from the bin, have you?

Ans. I have.

Cross-Q. 97. You have no recollection of his explaining to you the pump on the plan of the faucet, have you?

Ans. I have not, as he wasn't manufacturing any of them at the time.

Cross-Q. 98. You have no recollection of his explaining to you the carpet-rag knotter, have you?

Ans. No, sir.

Cross-Q. 99. You have no recollection of his explaining to you the machine with the steel die for cutting carpet-rag knotters, have you?

Ans. No, sir.

Cross-Q. 100. You have no recollection of his explaining to you the machine for insulating wire, have you?

Ans. I have not; I only have a faint recollection of him having one to insulate wire with.

Cross-Q. 101. Now as you seem not to have comprehended my ninety-third question I will ask the examiner to repeat it and you to answer it again; and in answering it you may refer to the answers you have given since it was put, in order to assist your recollection.

(93d question repeated by the examiner, and all the intervening questions and answers up to this point are read to the witness.)

Ans. The instrument for telegraphing, without batteries; the call-bell; that wire he explained about, but that was after I quit. You only

want what were in 1874? He also explained about that machine for keeping count of the number of bushels that you measured. He also explained, since I have come to think and study over it, about charging those magnets with electricity, but I can't recollect any more what the explanation was. That is all I can think of just now. I don't know whether I have said any more than that, or not.

Cross-Q. 102. If Daniel Drawbaugh explained to you any other inventions of his in 1874, you have totally forgotten the fact, have you not?

Ans. I have mentioned everything that he explained to me, to the best of my knowledge, and there was nothing of any importance that he explained to me, if he did explain it to me, that I have forgotten, for I took an especial interest in what he was doing, as I was greatly interested in learning the trade at that time, for he was a great inventor; I knew that.

Cross-Q. 103. And if you saw any other machine of his invention there, in 1874, which you have not already testified to, then you have totally forgotten the fact, have you not?

Ans. I never saw anything else but what I have testified to.

Cross-Q. 104. And if you did see anything else there, in that year, then you have totally forgotten the fact, have you not?

Ans. I did not see anything else there, that is, of his invention.

Cross-Q. 105. I have not the same confidence in your memory that you seem to have, and I ask you again to answer the question as I put it; if you did see anything else there, have you not totally forgotten the fact?

Ans. I understood that I answered it: I thought that would answer the question, and I answered it.

Cross-Q. 106. You have not yet answered it, and I repeat it.

Ans. I may not understand the question the way you mean; do you mean whether I saw a telephone there or not, or the models of any?

Cross-Q. 107. You need not hold yourself so carefully on your guard about Mr. Drawbaugh's telephones—I made no reference to any particular machine, or instrument, but put to you a very simple and clear question; I will now put it again in substance, as follows: You have here testified that, in 1874, you saw at Mr. Drawbaugh's shop certain mechanical devices of his invention, naming them each and all; now, if you then saw anything else there of his invention, have you not totally forgotten the fact?

Ans. The only answer I can give to that, is this: That those inventions that I named over in answering the several questions, were all that I ever knew of him having with the exception of the two different pat-

terns of the faucets which I overlooked when I was testifying; I didn't think about them right. And they being the only ones that I knowed of, are the only ones that I seen; that is the only way I know of to answer the question. I am not trying to evade anything, but only telling what I have seen.

Recess for lunch, until 2.30, P. M.

DECEMBER 15, 1882, 2.30, P. M.

Examination resumed, pursuant to adjournment.

Present, same counsel.

Cross-Q. 108. Now, as you have had your dinner and had time to think, I ask you again, whether if you saw any other inventions of Daniel Drawbaugh at his shop in 1874, than those you have already mentioned, you have not totally forgotten the fact?

Ans. As I have said before, I don't know of any other inventions that he had that I could have forgot.

Cross-Q. 109. But if he had any other inventions and showed them to you, you have forgotten the fact, have you?

Ans. He never showed me any other inventions, and I didn't know of his having any. If he had any, I never knew of them, and, of course, couldn't have forgotten them.

Cross-Q. 110. From your persistent answers to my questions, I judge you claim to have an absolutely infallible memory; is that the fact?

Ans. I do not exactly, but this much I have to say: I have had, ever since my correspondence with my father and sister in the years 1881 and 1882, plenty of time to know whether I had seen any other inventions, or whether I had forgotten any others, I should think, especially the telephone.

[*Complainants' counsel says, that the witness having answered the question, he suggests to the counsel for the respondents, that if he has really formed the judgment which he expressed—in the last question, he will, upon reflection, see that the judgment is an unjust one towards the witness, inasmuch as the witness has stated that as to some things his recollection is dim, and as to some things he did not remember the explanations which were given him, and in answer to some of the later interrogatories, has stated that he remembered some things which he did not at first remember.*

Respondents' counsel replies that he is aware of the fallibility

of the witness' memory, as already developed in this examination, and he is well aware that any witness can swear to what he remembers having seen, but he is not aware how a witness can swear that he has not seen and forgotten things of which he professes to have no present knowledge. He has been pursuing these inquiries for the purpose of showing the bias of the witness, notwithstanding the professed friendship for Daniel Drawbaugh, and as the witness absolutely refuses to answer the question as propounded, he will now proceed to another inquiry.]

Cross-Q. 111. Did you see any machines or contrivances in Drawbaugh's room in the shop in 1874, the object and use of which you did not know or understand at the time?

Ans. Nothing that I remember of.

Cross-Q. 112. If you did see any, you have forgotten the fact, have you?

Ans. You have, I suppose—you don't mean patents or inventions; I would like to have the question put in that light.

Cross-Q. 113. I said machines or contrivances in Daniel Drawbaugh's room in the shop in 1874. I don't know how I can make it any plainer than that; and you will please answer the question, which I now repeat.

Ans. I did not see anything that I did not know what it was for, to the best of my knowledge, that I could have forgotten.

Cross-Q. 114. Will you or will you not answer this question? If you did see any machine or contrivance there at that time, the object and use of which you did not understand at the time, you have entirely forgotten the fact, have you not?

Ans. I will answer in this way, that to the best of my ability, which I consider in answering the question, that I seen nothing there but what I mentioned that I could have forgotten.

Cross-Q. 115. If you saw anything there that you have not mentioned, then, it is for the reason that you have forgotten it; is that true?

(*Counsel for the complainants inquires whether the question has reference to machines or contrivances which were the invention of Daniel Drawbaugh, or whether it is intended to embrace also common and familiar objects, such as benches, chairs, pictures, books, newspapers, and common and familiar tools, etc.*

Respondents' counsel replies that the question refers to machines, contrivances, and instruments, the object and the use of which the witness did not understand at the time.)

Ans. I don't know of anything being there at all that I didn't see; there might have been tools around that I didn't see, but any invention or contrivance—I saw those.

Cross-Q. 116. State and describe all that you saw in Daniel Drawbaugh's private room, in 1874, including everything, familiar or unfamiliar, that you remember.

Ans. That is a pretty hard question to answer.

Cross-Q. 117. State them, then, without describing them.

Ans. I saw an instrument for telegraphing without batteries, a call-bell for hotels or private residences, a barometer for weather, a machine for keeping account of the number of bushels taken out of a bin. I have a faint recollection of an insulator to insulate wire; there was two clocks there, one a tall English clock, as I believe they are called, and a faint recollection of a clock hanging against the side of the partition with its face off; a rag knotter, or a machine to make rag knotters, I should say; also a nail machine; that was down in the basement, though; that is all. Of course all the tools were there, files and all necessary tools to work with, a wooden lathe for to turn wood with, and other tools too numerous to mention over, just for working with.

Cross-Q. 118. That is all that you saw in his private room in 1874, is it?

Ans. That is all I saw; the tools were laying around there thick; some of them were half covered with dirt; there was no telling what was in the room.

Cross-Q. 119. Do you refer to the room in the north-east corner or the room in the north-west corner on the second floor?

Ans. I refer to the room in the north-west corner of the second floor.

Cross-Q. 120. And there were so many things in that room that there was no telling what was there; is that the fact?

Ans. I refer to the tools lying around thick and the wood and shavings from the turning-lathe.

Cross-Q. 121. Was there a work-bench in that room?

Ans. There was.

Cross-Q. 122. Did it have any drawers?

Ans. It did have one or two; I am not positive of the number; I know it had one, at any rate.

Cross-Q. 123. Did you see what was in those drawers?

Ans. I did not see what was in the drawer that I remember of being in the bench.

Cross-Q. 124. Were there shelves or a shelf in the room?

Ans. I am not positive about shelves, but I think there was a sort of a cupboard there with two shelves in; I am not positive about that, though.

Cross-Q. 125. If you are not positive about the cupboard being there, of course you do not know what was in it, if it was there, do you?

Ans. I do not.

Cross-Q. 126. If you are not positive about there being a shelf there outside of the cupboard, then of course you do not know what was on that shelf, if it was there, do you?

Ans. No, sir; I do not.

Cross-Q. 127. Was there a desk in that room?

Ans. There was not, to the best of my knowledge.

Cross-Q. 128. What was in the north-east room, on the same floor, in 1874?

Ans. I will give what I remember. There was two clocks and some tools for working with; that is all that I remember of.

Cross-Q. 129. Was there a bench there, or table?

Ans. There was a bench in that room.

Cross-Q. 130. Did it have any drawers?

Ans. I not know.

Cross-Q. 131. If it did have, then, of course, you do not know what was in them, do you?

Ans. If it did have, of course I did not know what was in them, because I do not know whether it had any drawers.

Cross-Q. 132. Was there any cupboard in that room?

Ans. I don't know; I don't remember.

Cross-Q. 133. If there was, then you do not know what was in it, do you?

Ans. I do not.

Cross-Q. 134. Was there any shelf in that room?

Ans. I don't know.

Cross-Q. 135. Then if there was, you do not know what was on it, do you?

Ans. I do not.

Cross-Q. 136. Was there any desk in that room?

Ans. I do not know; I did not see any that I remember of.

Cross-Q. 137. If there was, then you do not know what was in it, do you?

Ans. I do not.

Cross-Q. 138. Was there not a long bench that ran almost the whole length of the large south room of that floor?

Ans. There was a bench running along the one side of it.

Cross-Q. 139. How long was that bench?

Ans. It might have been twenty feet; I can't say exactly; it might have been more; I am not certain as to the length of it.

Cross-Q. 140. It ran the whole length of the room, did it not?

Ans. It ran very close to it, if it didn't; I don't remember any more about that.

Cross-Q. 141. Did it not have drawers all along the whole length of it?

Ans. I don't know of it having any drawers; not that I remember of.

Cross-Q. 142. The bench that is there now has drawers, and is located on the west side of the room against the wall; was that the location of the bench then?

Ans. That was the location of the bench then, although there could have been drawers put in since I left in 1874; I don't think there were any drawers in it in 1874; I am not positive, though.

Cross-Q. 143. If there were any drawers in it at that time, you did not know what was in them, did you?

Ans. I did not.

Cross-Q. 144. Did you know everything that was on that bench in the south room during all the time you were there?

Ans. I did not.

Cross-Q. 145. Do you remember anything that was on it while you worked there?

Ans. There was a machine for making funnels for the faucets, and there was a small wood-lathe for turning the handles of the faucets; I think both of those were on that bench.

Cross-Q. 146. Wasn't the machine for making funnels for faucets arranged at the south end of the room, where it was a year ago?

Ans. I do not know where it was a year ago, but it was at the south end of the building.

Cross-Q. 147. You mean in 1874?

Ans. Yes, sir.

Cross-Q. 148. Were there not nails or pegs projecting from the walls of that large south room, and a great many of them, too?

Ans. I don't know whether there was or not; I don't remember.

Cross-Q. 149. Don't you remember any?

Ans. I can't say that I do.

Cross-Q. 150. Then of course you don't remember anything that was hanging from them if there were any there, do you?

Ans. I do not.

Cross-Q. 151. Was there any shelf or shelves in that large south room?

Ans. I don't remember.

Cross-Q. 152. And of course if there were any you don't know what was on them, do you?

Ans. I do not.

Cross-Q. 153. Was there any closet or closets in that large south room?

Ans. None that I knowed of.

Cross-Q. 154. Can it be that there was, and that you have forgotten about it?

Ans. It might possibly have been there; I don't know whether I would have forgotten that or not, not being particularly interested about anything of that kind.

Cross-Q. 155. And of course if there was any there you don't know what was in it, do you?

Ans. I do not.

Cross-Q. 156. Was there any desk in that large south room?

Ans. Not that I remember of.

Cross-Q. 157. You have testified, in answer 90, that you remember of one wire running out of the shop, out of the north-east corner of the building into the ground, and were told that it was connected with the new clock that he had made; you have since testified that that was after you left there; state when it was.

Ans. The wire—I would like to correct that; it was south-east instead of north-east—I can't just state when that was; it was some time after I left, though.

Cross-Q. 158. If there had been any magnetic clock, with a connection by wires to the ground, while you were at work there, in 1874, would you have seen or known of it?

Ans. I think I would have.

Cross-Q. 159. How positive are you about that?

Ans. I am pretty near satisfied; I am certain there was none finished at that time; the large one was the one that was finished first; the only one that I know of, to the best of my knowledge.

Cross-Q. 160. Are you certain that while you worked there there was no magnetic clock sufficiently finished to be connected, by wires, with plates in the ground, and so caused to run at that time?

Ans. To the best of my knowledge, there wasn't.

Cross-Q. 161. Would you not, at that time, have deemed it a very remarkable thing for a clock to be run by plates in the ground, by connecting wires, and without winding?

Ans. I would have.

Cross-Q. 162. Could you possibly have forgotten such a thing, if you had seen it and known of it at that time?

Ans. I don't think I could have.

Cross-Q. 163. How certain are you about it?

Ans. I can't hardly answer that. As I said before, there was nothing made then yet, and not partly made, to the best of my knowledge.

Cross-Q. 164. That was not the meaning of my question; I meant, how certain are you that you would not have forgotten it if you had seen it and known of it?

Ans. I am not positively sure that it wasn't made, or that it was made; and, of course, I can't answer that any other way than that, to the best of my knowledge, it wasn't made then yet; and I don't think I could have forgotten it if it was made at the time of my working there.

Cross-Q. 165. Did you ever hear, before you went there to work, of there being a clock there, at Daniel Drawbaugh's shop, which was run by plates in the ground, with connecting wires, and without winding?

Ans. I did not.

Cross-Q. 166. While you were there at work, in 1874, did you see any clock that was run by another clock, by an electrical connection between them?

Ans. I have a faint recollection of that; but I am not certain as to the time, whether they were run by batteries or by electric magnets. I just have a faint recollection of it.

Cross-Q. 167. What time do you think it was when you first saw a clock run by another clock there?

Ans. I do not know what time it was, but think it was while I worked there; I am not positive, though.

Cross-Q. 168. Your memory is very indistinct in regard to the electric and magnetic clocks, is it not?

Ans. It is, with the exception of the large clock; I know it was finnished after I quit work; some time after.

Cross-Q. 169. When you saw one clock running another clock, did it not strike you as something wonderful?

Ans. Not in particular.

Cross-Q. 170. Had you ever heard of such a thing before you went to work there?

Ans. I did not.

Cross-Q. 171. When you found it there, did it excite your curiosity to examine into the thing carefully?

Ans. Oh, no! not in particular; I don't remember any more whether it did or not.

Cross-Q. 172. Did you examine into it carefully to see how it was done?

Ans. I did not, to the best of my knowledge.

Cross-Q. 173. When you found there was a clock there that was run by plates in the ground by connecting wires, without winding, did that excite your curiosity to examine into it carefully to see how it was done?

Ans. It of course excited my curiosity. It was explained to me by Daniel to be these electric magnets, and the wires in the ground gave it the power to make it run, to the best of my knowledge; I don't remember.

Cross-Q. 174. And that was after you quit work there, was it?

Ans. It was.

Cross-Q. 175. Did you examine into the mechanism to see how it worked?

Ans. I did not.

Cross-Q. 176. Did you notice whether it had one wire run into the ground or more than one wire?

Ans. I don't think it had more than the one; that was the only one I knew of that was said to be connected with that clock.

Cross-Q. 177. Mr. Theopilus Weaver, a witness called and examined by the complainants in this case, has testified in substance that as early as 1873 he went to Drawbaugh's shop to see a magnetic clock that he had previously heard was running there, and that he saw it, and it was run by plates buried in the earth connected to the clock by wires; if that clock was there as early as 1873, you must have certainly seen it while you were at work there in 1874; must you not?

Ans. I don't know what was there in 1873; I only speak of what I seen myself, what I am positive of and what I am not.

Cross-Q. 178. Do you think the clock might have been there in 1873, and yet you might not have seen it in 1874? Is that the idea?

Ans. The gentleman will please state which clock he means; the large clock that was finished afterwards, or the one he made reference to that wasn't quite finished, but was still run by magnetism.

Cross-Q. 179. I refer to the clock that Weaver says he saw there in 1873—a clock run by plates buried in the ground connected to it by wires.

Ans. I do not know anything about the clock that should have been there in 1873; to the best of my knowledge, there was no clock made or partly finished while I worked there.

Cross-Q. 180. And am I to understand you, that to the best of your knowledge, there was no clock run by plates buried in the ground, connected to it by wires, while you worked there?

Ans. You are; to the best of my knowledge, there was nothing of the kind.

Adjourned until December 16, at 10, A. M.

DECEMBER 16, 1882, 10, A. M.

Examination resumed, pursuant to adjournment.

Present, same counsel.

Cross-examination of Edward Nichols, by Mr. Hill, continued:

Cross-Q. 181. After you quit work there for the Haucks in 1874, when were you next there at Mr. Drawbaugh's shop?

Ans. I cannot state the time, but I was there a number of times afterwards.

Cross-Q. 182. Give us your best recollection of when you were there next after quitting work in 1874.

Ans. I was there when they were making the large clock and were manufacturing axles.

Cross-Q. 183. Who was making the large clock?

Ans. Daniel Drawbaugh was making the machinery, and Mr. George Drawbaugh was making part of the frame.

Cross-Q. 184. And who was working on axles at that time?

Ans. I don't think they were working on axles at that time yet.

Cross-Q. 185. You mean that you don't think they worked on axles until after the time when you saw Daniel and George working on the large clock?

Ans. I am not positive when they were working on the axles, but I think they worked on the axles after they had the clock made, to the best of my knowledge.

Cross-Q. 186. Had they the axle machinery in, at the first time when you went down there after quitting work for the Haucks?

Ans. I cannot say; I am not positive about that.

Cross-Q. 187. Did you ever see Harmon K. Drawbaugh there at the shop; if so, when and what was he doing?

Ans. I saw him there once while I was working there; I do not know what he was doing.

Cross-Q. 188. Were you ever in Daniel Drawbaugh's shop at night?

Ans. I was, one night.

Cross-Q. 189. When was that and how came you to be there?

Ans. That was after I worked there; we had some turkeys that was left from a shooting match that we had, and they were played off in that shop; that is how I came to be there at night.

Cross-Q. 190. Who was there that night?

Ans. I don't remember all their names; I can mention a few of them that I remember: Ira Kahney, Norman Kahney, Orlando Kahney, George Drawbaugh, and myself.

Cross-Q. 191. Was Daniel Drawbaugh there?

Ans. No, sir; not to the best of my recollection; he just gave us the use of the shop for the evening.

Cross-Q 192. Was that the only time you were ever there at night?

Ans. It is the only time that I can remember of.

Cross-Q. 193. It has appeared here in evidence that Daniel Drawbaugh was in the habit of doing a great deal of work in the shop at night. If so, I suppose you do not know what work he was doing there at night, do you?

Ans. I do not.

Cross-Q. 194. So far as you know, I suppose it may be true that while you were at work there for the Haucks, in 1874, Mr. Daniel Draw baugh may have done a great deal of work in the shop at night, about which you have no knowledge whatever, may he not?

Ans. I can't say anything about what he done at night; I don't know whether he worked at night or not.

Cross-Q. 195. You have referred to a call-bell for hotels, which you saw there while you were at work there for the Haucks. Will you describe the instrument as fully as you can?

Ans. There was two coils of insulated wire aside of one another, and there was a couple of magnets lying on top of one another; there was one or two bells on the board where these instruments were fastened on; and there was one or two posts for wires to be fastened to, with set-screws in the top to hold the wire, with a small knob to bear down on to ring the

bell with. That was the way I understood it. I have gave now as good a description as I can of it.

Cross-Q. 196. Please look at the instrument, "Exhibit C reproduced," now shown you, and state whether this is not the instrument which you saw, instead of a call-bell for hotels.

Ans. It is not.

Cross-Q. 197. Could you not possibly be mistaken about it, and have confounded this instrument with the call-bell instrument?

Ans. I could not; my recollection is very clear about that instrument.

Cross-Q. 198. Does this instrument look very unlike that call-bell instrument, or very like it?

Ans. It does not look like it.

Cross-Q. 199. In your judgement, could anybody mistake the one for the other?

Ans. I could not.

Cross-Q. 200. Did the call-bell instrument have anything like this mouth-piece, or anything like this upright board to which this mouth-piece is attached, in "Exhibit C reproduced" instrument?

Ans. It did not.

Cross-Q. 201. In the call-bell instrument, how did the horse-shoe magnet compare in size with the horse-shoe magnet on this "Exhibit C reproduced" instrument?

Ans. They were not near so large.

Cross-Q. 202. Do you think they were more than half as large?

Ans. As near as I can tell, they were just about half as large as that one.

Cross-Q. 203. About half as long and half as wide, should you say?

Ans. Yes, sir.

(*The examiner certifies that the permanent magnet on "Exhibit C reproduced," is 7 inches long and 3 1-4 inches wide at its widest part; and that the cores of the electro-magnet are 1 1-4 inches long.*)

Cross-Q. 204. When Daniel Drawbaugh took you into the basement of Chellis' store, at Harrisburg, and showed you there some telephone instruments, and asked you if you had ever seen them at his shop, how many instruments did he show you?

Ans. I do not know.

Cross-Q. 205. Describe the instruments he then and there showed you.

Ans. I will describe what I remember. He showed me an old glass,

Ans. I cannot say; I am not positive about that.

Cross-Q. 187. Did you ever see Harmon K. Drawbaugh there at the shop; if so, when and what was he doing?

Ans. I saw him there once while I was working there; I do not know what he was doing.

Cross-Q. 188. Were you ever in Daniel Drawbaugh's shop at night?

Ans. I was, one night.

Cross-Q. 189. When was that and how came you to be there?

Ans. That was after I worked there; we had some turkeys that was left from a shooting match that we had, and they were played off in that shop; that is how I came to be there at night.

Cross-Q. 190. Who was there that night?

Ans. I don't remember all their names; I can mention a few of them that I remember: Ira Kahney, Norman Kahney, Orlando Kahney, George Drawbaugh, and myself.

Cross-Q. 191. Was Daniel Drawbaugh there?

Ans. No, sir; not to the best of my recollection; he just gave us the use of the shop for the evening.

Cross-Q 192. Was that the only time you were ever there at night?

Ans. It is the only time that I can remember of.

Cross-Q. 193. It has appeared here in evidence that Daniel Drawbaugh was in the habit of doing a great deal of work in the shop at night. If so, I suppose you do not know what work he was doing there at night, do you?

Ans. I do not.

Cross-Q. 194. So far as you know, I suppose it may be true that while you were at work there for the Haucks, in 1874, Mr. Daniel Draw baugh may have done a great deal of work in the shop at night, about which you have no knowledge whatever, may he not?

Ans. I can't say anything about what he done at night; I don't know whether he worked at night or not.

Cross-Q. 195. You have referred to a call-bell for hotels, which you saw there while you were at work there for the Haucks. Will you describe the instrument as fully as you can?

Ans. There was two coils of insulated wire aside of one another, and there was a couple of magnets lying on top of one another; there was one or two bells on the board where these instruments were fastened on; and there was one or two posts for wires to be fastened to, with set-screws in the top to hold the wire, with a small knob to bear down on to ring the

bell with. That was the way I understood it. I have gave now as good a description as I can of it.

Cross-Q. 196. Please look at the instrument, "Exhibit C reproduced," now shown you, and state whether this is not the instrument which you saw, instead of a call-bell for hotels.

Ans. It is not.

Cross-Q. 197. Could you not possibly be mistaken about it, and have confounded this instrument with the call-bell instrument?

Ans. I could not; my recollection is very clear about that instrument.

Cross-Q. 198. Does this instrument look very unlike that call-bell instrument, or very like it?

Ans. It does not look like it.

Cross-Q. 199. In your judgement, could anybody mistake the one for the other?

Ans. I could not.

Cross-Q. 200. Did the call-bell instrument have anything like this mouth-piece, or anything like this upright board to which this mouth-piece is attached, in "Exhibit C reproduced" instrument?

Ans. It did not.

Cross-Q. 201. In the call-bell instrument, how did the horse-shoe magnet compare in size with the horse-shoe magnet on this "Exhibit C reproduced" instrument?

Ans. They were not near so large.

Cross-Q. 202. Do you think they were more than half as large?

Ans. As near as I can tell, they were just about half as large as that one.

Cross-Q. 203. About half as long and half as wide, should you say?

Ans. Yes, sir.

(*The examiner certifies that the permanent magnet on "Exhibit C reproduced," is 7 inches long and 3 1-4 inches wide at its widest part; and that the cores of the electro-magnet are 1 1-4 inches long.*)

Cross-Q. 204. When Daniel Drawbaugh took you into the basement of Chellis' store, at Harrisburg, and showed you there some telephone instruments, and asked you if you had ever seen them at his shop, how many instruments did he show you?

Ans. I do not know.

Cross-Q. 205. Describe the instruments he then and there showed you.

Ans. I will describe what I remember. He showed me an old glass,

or broken tumbler, and a board with a—it looked like an old tin-can—fastened on, and several mouth-pieces, and some other things that I can't give no description of; that I can't remember of rightly.

Cross-Q. 206. A large number of instruments were shown to you here in this room, during the afternoon of the day before yesterday, but all the instruments that were here in the examiner's trunk were not shown you; do you remember whether the instruments that were here exhibited to you by Mr. Smith, day before yesterday, and about which he asked you some questions in this deposition, were those instruments which Mr. Drawbaugh showed you in the basement of Chellis' store, or not?

Ans. They look very much like them; I do not know whether they were the same ones or not.

Cross-Q. 207. Please look at this instrument, "D," which I now show you, and state whether you ever saw this particular instrument before the present moment.

Ans. I cannot say positively.

Cross-Q. 208. You cannot swear, then, whether it is one that was shown you here day before yesterday, or not, nor whether it is one that Mr. Drawbaugh showed you in Chellis' store, or not, can you?

Ans. I cannot.

Cross-Q. 209. I show you another instrument, marked "Exhibit G," and ask you whether you are sure whether you ever saw this instrument before the present moment or not?

Ans. I am not positively sure, but I think I did.

Cross-Q. 210. Is it one that Mr. Drawbaugh showed you in Chellis' store?

Ans. It looks like one of them.

Cross-Q. 211. Is it one that Mr. Smith showed you here day before yesterday or not?

Ans. I do not know.

Cross-Q. 212. I show you now the instrument, "Exhibit E," and ask you whether you ever saw that before the present moment?

Ans. I am not sure.

Cross-Q. 213. You are not sure whether that was one of the instruments that Mr. Drawbaugh showed you in Chellis' store or not, are you?

Ans. I am not.

Cross-Q. 214. Now, whether it was one of the instruments that Mr. Smith showed you here on Thursday afternoon, are you?

Ans. I am not sure about it.

Cross-Q. 215. I show you now another instrument marked Exhibit A, and ask you whether you have ever seen that instrument before the present moment, or not?

Ans. I do not know; there were so many instruments shown me that I have forgotten.

Cross-Q. 216. You do not know, then, whether Mr. Drawbaugh showed you that in Chellis' store or not; do you?

Ans. I do not.

Cross-Q. 217. Now, whether Mr. Smith showed it to you here on Thursday or not; do you?

Ans. I am not positively sure.

Cross-Q. 218. I show you another instrument marked Exhibit K, and ask you whether you ever saw that instrument before the present moment, or not?

Ans. I don't think I did; I am not sure.

Cross-Q. 219. You are not sure whether that is one of the instruments Mr. Smith showed you here on Thursday afternoon; are you?

Ans. I am not.

Cross-Q. 220. I show you another instrument marked "Exhibit M" and ask you whether you ever saw that instrument before the present moment, or not?

Ans. I am not sure.

Cross-Q. 221. You don't know whether that is one of the instruments Mr. Drawbaugh showed you in Chellis' store or whether it is one that Mr. Smith showed you here on Thursday afternoon; do you?

Ans. I do not.

Cross-Q. 222. I show you another instrument, marked "Exhibit O," closely resembling "Exhibit G;" do you remember whether you ever saw this Exhibit O before the present moment or not?

Ans. I do not.

Cross-Q. 223. Do you remember whether or not Mr. Smith, on Thursday afternoon, showed you this "Exhibit O?"

Ans. I do not.

Cross-Q. 224. Do you remember whether or not Mr. Smith, on Thursday afternoon, showed you any machine looking like "Exhibit O;" and if so, whether he showed you one or two or more?

Ans. I am not positive whether I saw any like that.

Cross-Q. 225. I now show you instrument marked "Exhibit H," and ask you whether Mr. Smith showed you that machine here on Thursday afternoon, or not?

Ans. He did, or one like it.

Cross-Q. 226. Do you remember whether that instrument was among the instruments which Mr. Drawbaugh showed you at Chellis' store on the occasion you have referred to?

Ans. I think it was.

Cross-Q. 227. How positive are you about it?

Ans. I am pretty positive that I seen it.

Cross-Q. 228. Does that instrument look anything like Drawbaugh's hotel annunciator that you saw at Eberly's Mills?

Ans. It does not.

Cross-Q. 229. You could not, by any possibility, mistake the one for the other; could you?

Ans. I could not.

Cross-Q. 230. I show you now the instrument marked "Exhibit J," and ask you whether Mr. Smith showed you that instrument here on Thursday afternoon, or not?

Ans. I think he did.

Cross-Q. 231. Did Mr. Drawbaugh show you that instrument at Chellis' store on the occasion referred to by you?

Ans. I do not know.

Cross-Q. 232. I show you now another instrument marked "Exhibit P," and ask you whether Mr. Smith showed you that instrument here on Thursday afternoon or not?

Ans. I don't think he did.

Cross-Q. 233. Did Mr. Drawbaugh show you that instrument at Chellis' store on the occasion you have referred to?

Ans. I don't think he did.

Cross-Q. 234. How sure are you that Mr. Smith did not show you that instrument here on Thursday afternoon?

Ans. I am right sure about it that he didn't, to the best of my knowledge, at any rate.

Cross-Q. 235. Is it possible that he may have shown it to you and you have forgotton the fact?

Ans. I don't think it is.

Cross-Q. 236. Will you swear that it is not possible?

Ans. I am not certain enough about it to do that.

Cross-Q. 237. When Mr. Smith showed you those instruments here on Thursday afternoon, had you ever seen any of them since Mr. Drawbaugh showed them to you at Chellis' store?

Ans. J. C. Comfort showed me some of them at the United States Hotel, in Harrisburg, and Mr. Storrow showed me a few in his room in this hotel.

Cross-Q. 238. When did Mr. Comfort show you some of these instruments?

Ans. It was on Thursday evening, December 7, 1882—the evening before I came down here.

Cross-Q. 239. Did Mr. Comfort show you the same instruments that were shown to you here by Mr. Smith on Thursday and by me this morning?

Ans. They look familiar, some of them.

(*The examiner certifies that the instruments in evidence, and shown to the witness here by Mr. Smith on Thursday and by Mr. Hill this morning, have not been out of his possession, and could not have possibly been at Harrisburg at the time mentioned by the witness.*)

Cross-Q. 240. Did you ever at any time see an automatic fire-alarm at Mr. Drawbaugh's shop?

Ans. I did not.

Cross-Q. 241. When did you first ever hear that there was one there?

Ans. Since I was in Philadelphia here to give this deposition, I was asked the question.

Cross-Q. 242. Did you ever see at Mr. Drawbaugh's shop any instrument for canceling stamps?

Ans. I did not.

Cross-Q. 243. When did yon first hear of there ever having been such an instrument there?

Ans. While I was here in Philadelphia to give this deposition.

Cross-Q. 244. Did you ever see an automatic boiler-feeder at Mr. Drawbaugh's shop?

Ans. I did not.

Cross-Q. 245. When did you first hear of such a thing having been there?

Ans. Since I was in Philadelphia here to give my deposition.

Cross-Q. 246. Did you ever see a steam syphon pump at Mr. Drawbaugh's shop?

Ans. I did not.

Cross-Q. 247. When did you first hear of such a pump ever having been there?

Ans. I don't think I ever heard that there was one there.

Cross-Q. 248. Did you ever see a telegraph instrument at Mr. Drawbaugh's shop having keys with letters upon them, something like the keys of a type-writer?

Ans. I don't remember. I can't say about the keys.

Cross-Q. 249. When did you first hear of such an instrument ever having been there?

Ans. Do you mean an instrument for telegraphing, or an instrument for telegraphing with keys on?

Cross-Q. 250. I mean an instrument for telegraphing with keys, having letters marked on it.

Ans. I don't know of ever having heard of a machine for telegraphing with keys on. I am not positive.

Cross-Q. 251. Did you ever see a telegraph instrument at Mr. Drawbaugh's shop having a dial?

Ans. I did not.

Cross-Q. 252. When did you first hear of such an instrument having been there?

Ans. I did not hear of any instrument being there of that kind, with a dial.

Cross-Q. 253. Did you ever see any kind of an instrument there having a horseshoe magnet, with a knob on the bent end of the magnet?

Ans. I am not sure.

Cross-Q. 254. Reference has been made, in taking your deposition, to the deposition of your father, Samuel Nichols, commencing at page 238, respondents' printed record; he testifies that he was at Drawbaugh's shop about the second summer after he moved to While Hill station, which would be along about 1869, and then and there first saw Daniel Drawbaugh's talking machine, and heard words spoken through it; how old were you in the year 1869?

Ans. I must have been about twelve years old, as I will be twenty-five in a couple of weeks.

Cross-Q. 255. Your father also testified that Mr. Samuel Bruce and several other parties were there with him at Mr. Drawbaugh's shop on that occasion. Do you know of anything to prevent your father from being at Daniel Drawbaugh's shop with Mr. Samuel Bruce and several other parties, in the year 1869 or the year 1870?

Ans. In the first place I don't think my father was acquainted with Mr. Bruce at that time; and I don't think that he was acquainted with Mr. Drawbaugh, although I am not positively. I think he must be mistaken about his date.

[*Answer objected to by Mr. Hill, as not responsive, as argumentive, and not based upon facts, but upon opinion and assumption.*]

Cross-Q. 256. Do you undertake to swear as a fact that your father was not acquainted with Samuel Bruce or Daniel Drawbaugh in 1869 or 1870?

Ans. I do not. That is only my opinion.

Cross-Q. 257. Who do you think ought to know best who his acquaintances were at that time, your father himself, or you, who were a mere boy twelve years old?

[*Objected to by Mr. Storrow as argumentative and not calling for any fact, but for a mere opinion.*]

Ans. I think he ought to know himself, although I have my own opinions.

Recess for lunch until two, P. M.

DECEMBER 16, 1882.

Examination resumed, pursuant to adjournment.

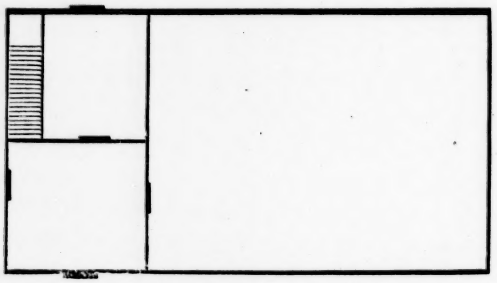
Present, same counsel.

Redirect by Mr. Storrow:

Q. Q. 258. You have been asked about the rooms and contents of the rooms on the second story of Mr. Drawbaugh's shop, while you worked there for Mr. Hauck in 1874; please to state how that story was partitioned off and make a sketch of it, if you can do it any easier that way.

Ans. About one-third of the room at the northwest end there was a partition running through the whole length, and then there was a partition run through that smaller part that was made, making three different sized rooms. There was a stair-way came up, and the room that it took was taken out of the smaller room.

(Witness makes a sketch as follows:)



NICHOLS' ANSWER TO *Q.*-*Q.* 252.

(Complainants' counsel requests the examiner to note that on Thursday afternoon it was Mr. Storrow and not Mr. Smith who conducted the examination of this witness, that it was Mr. Storrow and not Mr. Smith who showed the instruments to the witness in connection with the 45th and 46th questions, and that Mr. Smith was not present in the examining room at that time. The examiner so certifies.)

Re-cross by Mr. Hill:

Re-cross-Q. 259. Were the instruments shown to you in this room on more than one occasion last Thursday, or on only one occasion?

Ans. They were only shown to me once in this room on last Thursday.

Re-cross-Q. 260. And that was at the time when the 45th and 46th interrogatories were put to you; was it not?

Ans. That was the time.

Re-cross-Q. 261. When, in my cross-examination, I inadvertently used the name of Mr. Smith, instead of Mr. Storrow, in connection with the exhibition of those instruments to you here in this room on Thursday last, did you not understand all such questions of mine as, in fact, relating to the showing of the instruments to you at the time of your 45th and 46th answers?

Ans. I did.

Re-cross-Q. 262. And if I had used the name of Mr. Storrow, instead of Mr. Smith, in all of my said questions that would not have caused you to answer me any differently from what you did; would it?

Ans. It would not.

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me, this 16th day of December, 1882.

FRED. M. OTT,
Examiner.

EDWARD M. NICHOLS.

Adjourned until Monday, December 18, 1882, at ten, A. M.

DECEMBER 18, 1882, 10, A. M.

Examination resumed, pursuant to adjournment.

Present, Mr. Storrow for complainants and Mr. Hill for respondents.

JACOB CARNS, *being produced, sworn and examined, saith:*

Examined by Mr. Storrow:

Q. 1. Please state your age, residence, and occupation.

Ans. My age is thirty-two; occupation, machinist, and residence, Akron, Ohio; I am employed in Altman, Miller & Co's., Buckeye Mower and Reaper Works.

Q. 2. Did you ever work for the Drawbaugh Manufacturing Company, at Milltown, or Eberly's Mills, Cumberland county, Pennsylvania?

Ans. Yes, sir.

Q. 3. If you have a memorandum book which states the time or times when you worked there, will you please produce it and point out the entries therein relating to your work there and read them to the examiner he may take them down as part of your answer?

Ans. I will; I produce the book and the entries are as follows:—

The first entry is in pencil as follows:

"1868.

August 10, 1868. Commence working in the machine-shop at Milltown, Luther Gorgas and Daniel Drawbaugh foremen. Boarded at Eli Good's until Sept. 15th, in the evening, and then went to Elisha Howks and stayed there until February 27; left in the evening and to Drawbaughs'."

This is all there is on that page; the next page is in ink, and is as follows:

"1868.

August 10, 1868. Commence working in the machine-shop at Eberly's mill. W. L. Gorgas, D. Drawbaugh, foremen, 1868.

Board at Eli Goods until Sept. 15th, in the evening, and then went to Elisha Hauck and stayed till February 27 in the evening, and then went to D. Drawbaugh, and left Aug. 7th, 1869."

This is all there is on this page. All of this page is written in black ink except the words "and left Aug. 7th, 1869," which are in purple ink.

The next entry is as follows, and is in pencil:

"Oct. 11, 1869. Moved to Milltown, and worked in the machine-shop. Board at Jesse Kirtz."

This is all there is on that page.

Q. 4. According to your memoranda you seem to have left Milltown August 7, 1869, and moved back there October 11, 1869; during that interval of about two months, where did you live, whom did you work for, and did you begin to work in the machine shop October 11, when you moved back, or had you worked there any number of days before you moved back?

Ans. I was in Shiremanstown; I was not doing anything in particular, part of the time. I stayed with George Eichelberger on the Haldeman farm. He is my uncle; I have forgotten just how long I stayed with him; on October 11th I began work at the machine shop.

Q. 5. Please point out the entries, if any, in your book showing the time that you worked there after you went back.

Ans. I point them out; my book has an entry beginning as follows:

"October, 1869" (at top of page.)

under this is written:

	Time for the shop,	H.	M. meals.
12.	Mak Boxes,	10	4
13.	Work on chuck,	10	3

In that way the account goes on, containing in a similar manner an account and memorandum of the work done each day during the following months: 1869, October, November, December; 1870, January, February, March, April, May. Then the account turns back some pages in the book and continues during the rest of May, June, July; that is as far as this book goes.

Among the entries of work done are the following, on various days: "nail feeder," "work on chuck," "make boxes," "turn two points," "everything," "shade stamp," "fit faucets," "horse-power fettrow," "pump," "set up pump," "mandrel," "press," "box faucets," "punch washers," "hand drill," "lathe rest," "making taps," "Kirtz flitting," "pulley," "studs," "lathes."

Q. 6. In whose handwriting are those entries?

Ans. They are in my own.

Q. 7. Were they made while you lived at Eberly's Mills, and at or about the time of the dates set down in them?

Ans. They were.

Q. 8. Read the first page in the book next to the cover, and tell me what the date there means, and whose handwriting it is.

Ans. "The property of Jacob Carns, April 16, 1867;" it is my own handwriting, and the date is the time the book was bought.

Q. 9. One of the memoranda which you have read from your book is, "February 27, in the evening, went to D. Drawbaugh and left Aug 7, 1869;" did you board at Mr. Daniel Drawbaugh's house during those six months, and live with his family and lodge there?

Ans. I did.

Q. 10. If you have a memorandum book which continues after this one, will you please produce it and point out the entries which relate to your work at the machine shop at Eberly's Mills?

Ans. I produce it, and point out the following entries:

The first page inside of the cover contains the following:

"Jacob Carns, Eberlys Mills, Cumberland County, Pa, bought of at Harry Rupps store, Shiremanstown, August 2th, 1870."

My time is kept, beginning on page 13, as follows:

"August 1870

No	Faucets	M.	Date	Days.
6	"	2	2	T
6	"	3	3	W
1–2	a day at the dam "	"	3	"
1–2	" " "	"	4	Th"

This account continues through August, September, October, November, December, and January, 1871, and through the 4th day of February. On the same page with the February account is the following:

"Monday, April 17, 1871 left Shiremanstown Cumberland Co, Pa for Pittsburg. Arrive on Tuesday afternoon about three o'clock. Left Harrisburg in the morning at half past four."

Q. 11. I judge from the entries in this account that during a good deal of the time between August, 1870, and February, 1871, you worked on piece-work on the faucets; is that the fact?

Ans. Yes, sir.

Q. 12. Your account seems to end on the 4th of February, 1871, and the next memorandum on the line below it is the memorandum about

leaving Shirmanstown on April 17, 1871. Where were you during the interval between the 4th of February and the 17th of April, 1871?

Ans. I stayed at home in Shiremanstown.

Q. 13. Where did your parents live while you worked at Eberly's Mills?

Ans. In Shiremanstown.

Q. 14. Were you born and brought up in Shiremanstown, or in that neighborhood?

Ans. I was born at Mechanicsburg. Left there in 1858 or 1859 and moved to Virginia. In 1864 we moved to Shiremanstown, and I stayed there until April 17, 1871. My parents continued to live at Shiremanstown until they died.

Q. 15. In whose handwritting are the entries which have just been read from this second book; and were those up to February 4, 1871, made while you were at Eberly's Mills, and at or about the time of their respective dates?

Ans. They are in my own handwriting. The entries referred to were made at Eberly's Mills, and at or about the time of their respective dates.

Q. 16. Did the faucet company pay you in full in cash when you went away, or how did they settle your bill at that time?

Ans. They gave me their note for $72 42, balance due me. I have a memorandum of the amount on page 20 of this book.

Q. 17. Did you ever work at Milltown after February, 1871?

Ans. No, sir.

Q. 18. I now ask you to turn back to your first book, and point out any entries you have there relating to any of your other occupations while you lived at Milltown?

Ans. I point out the following entries in that book:

"Th Feb 4, 1869 cold Commence giving Emma Drawbaugh music lessons.

Tues Feb 9 rainy; went to Drawbaughs in the evening 2 H

Fri 12 Feb pleasant; went to Drawbaughs in the eve. Es Gilbert's sale to-day.

Tues 16, pleasant; help to build the cow stable at Dan Drawbaughs went at night.

Fri 19 cold; at Drawbaughs in the eve

Feb 23 1869 cold, in the evening at Drawbaughs.

Feb Fri 29 Stay at home.

March Tues 2 pleasant; 2 hours in the evening.

Fri 5, 2 h in eve

Tues 9 no lessons
Fri 12 2 h eve
Tues 16 2 h eve
Fri 19 2 h eve
Tues 23 no lesson
Fri 26 2 h
Tues 30 no lesson
Fri 2 ditto
Tues 6 no lesson
Fri 9 ditto."

Q. 19. Was Emma Drawbaugh Daniel Drawbaugh's daughter, and did you give her music lessons at the times stated in these entries?

Ans. She was and I did.

Q. 20. What kind of lessons, and what kind of an instrument did you and she employ, and where was the instrument, and whom did it belong to?

Ans. Lessons on the cabinet organ; the instrument was in Drawbaugh's house, and belonged to Drawbaugh; the organ was a Smith's American organ.

Q. 21. Have you studied music somewhat carefully, and have you been in the habit of playing in church and teaching somewhat?

Ans. I have.

Q. 22. Are the Drawbaughs a musical family?

Ans. They are.

Q. 23. While you were at Eberly's Mills, was Mr. Daniel Drawbaugh's house well furnished, and did his family live comfortably?

Ans. They lived comfortable; his house was well-furnished.

Q. 24. You have read from your memorandum-book an entry that you left home for Pittsburg, April 17, 1871; if you have in the same book an entry showing when you next went home to Shiremanstown, and how long you remained there at that time, please point it out and read it, and state what event took you home at that time.

Ans. I point it out. It is on page 66 and the following pages, as follows:

"1872, January 10th, got the news that father was dead. * * * * * Thursday, 11th, left Akron, at 7 o'clock in the morning. * * * * * * * Got home by 7 in the morning of the 12th."

Then follows some memoranda about visits which I made while at home, and then under head of February, 1872:

"Monday 5, started for Ohio. Left home at half-past three, and arrived at Akron on the evening of the 6th."

Recess for lunch, until 2.30, P. M.

DECEMBER 18, 1882, 2.30, P. M.

Examination resumed, pursuant to adjournment.

Present, same counsel.

Examination of Jacob Carns, by Mr. Storrow, continued:

Q. 25. Will you point out in this same memorandum-book entries showing when you next went home to Shirmanstown, and when you next left there, and who you went to work for then?

Ans. I point out and read entries as follows: Under the head of May, 1872. "28th, leave for home." On the same page, and under the same year, I point out and read the following entry: "Monday, June 17th, go to Harrisburg to work in the Harrisburg machine shop. Board at John Reily's, on Fourteenth street, pay 22 cents a meal. 25th, Hiram Drawbaugh came to work."

Q. 26. Was that machine shop the machine shop of the Harrisburg Car Company, in Harrisburg?

Ans. I understood it to be a branch of the car works.

Q. 27. Will you please point out and read in the same memorandum-book any entry which shows when you took away your tools and finally left working at the Harrisburg car works?

Ans. On page 108, under the head of 1874, I read:

"Sep. 5th, bring my tools from the shop. Sep. 7th, leave 435 Wal-"nut street, Harrisburg, Pa., kept by Hiller, and come home."

Q. 28. It appears from these entries that it was something more than two years from the time when you first went to the Harrisburg Car Company's machine shop and the time when you finally left there; was there steady work there all the time, or was there any part of the time during which the company suspended work?

Ans. I was suspended, off and on, at and after the time of the panic in 1873.

Q. 29. I see by the entry that Hiram Drawbaugh went to work there a few days after you did; did he work there with a good while?

Ans. Yes, sir.

Q. 30. Did he and you board together or room together any part of the time?

Ans. We boarded and roomed together.

Q. 31. Had you known him before that?

Ans. Yes, sir.

Q. 32. Had he worked for the faucet company, at the shop at Milltown, during part of the time while you worked there?

Ans. He had.

Q. 33. Will you point out in your book and read any entries showing when you next left home, where you went to, and when you returned?

Ans. I read from page 108, as follows: under the head of 1874, and immediately following the entry copied into my 27th answer, I find and read the following:

"Sept 15th leave Shiremanstown for Johnstown."

On page 5, of the same book, under the head of November, 1874, I read:

"14th. Sat. leave Johnstown for Harrisburg."

Q. 34. Will you now please point out, in any memorandum book you may have, the time when you next left Shiremanstown, and where you went to?

Ans. I produce a third memorandum book, in which is written inside the cover:

"Jacob Carns, Shiremanstown, Cumberland county, Pa, Nov. 16, 1874."

That is in my handwriting, and is the date when I got the book. I read from it the following entry:

"April 1875, 5th commence work for the P. R. R. Co."

This is followed by a memorandum of the different days' work done there. In another part of the same book, which contains a kind of diary, I read:

"April 1875, 1st. I received a letter from G. M. Stratton for to come to work."

"3rd, leave Shiremanstown at 7 o'clock in the morning for Altoona."

Q. 35. Who was G. M. Stratton, and where did you go to work for the Pennsylvania Railroad Company?

Ans. G. M. Stratton was master mechanic at the Altoona shops of the Pennsylvania Railroad Company; I went to work there.

Q. 36. Please to point out in your same memorandum book, No. 3, the entries which show when you visited Shiremanstown when at work at Altoona.

Ans. On page headed 1875, I read:

"October 16th went home on a pass and stayed until the 21st and "then went to Johnstown and returned on the 24th."

On the next page, headed 1875, I read:

"December 10th leave Thomas Coles and start for home * * * " * * * on the morning of the 11th arrived home at half-past

"eight. Friday December 31st leave home at 7 o'clock in the evening "for Altoona."

On the next page I read:

"1876, January 1st, arrived at Altoona at nine o'clock in the morn- "ing."

From the next page, headed 1876, I read:

"May 6th start for home * * * * *"

On the same page, a little lower down, I read:

"11th, leave home for Altoona."

"11th" means 11th of May. Under the head of October, 1876, I find:

"Oct 2 start for Shiremanstown."

Under the same head I find:

"9th Sister Kate and I started for Philadelphia."

We went to the Centennial. Under the head of October 12, 1876, I read:

"Arrived at home at 12 o'clock at night."
"16th, take the limited mail for Johnstown.
"17th, go to work for the Cambria Iron Co.

Under the head of 1877:

"April Saturday 7th received a dispatch from home that mother was "dying left Johnstown at 12 o'clock noon, got home at nine in the even- "ing."

Under the head of 1877:

"May 1st leave Shiremanstown at half past eleven for Johnstown; arrive at 11 o'clock at night."

Q. 37. Did your mother's death break up the household in your old home?

Ans. Yes, sir.

Q. 38. When have you been back to Shiremanstown since that?

Ans. Once, when I went back to settle up my mother's estate with the administrator.

From the same memorandum book and from the page headed 1878, May, I read:

"16th leave Johnstown for Altoona. Stop all night with J. G. Wolf, 17th leave Altoona in the morning for Harrisburg, take dinner at the White Hall Hotel kept by Harry Neidig, go to Shiremanstown, stop at sister Kate's."

Q. 39. Are these various entries which you have read in your handwriting, and were they made at or about the time of their respective dates?

Ans. They are my handwriting and they were made about that time.

Q. 40. In the book which you first produced I observe that several entries are written in pencil and then the same, or substantially the same thing is copied or written in ink on another page; how did that happen and why did you rewrite them in ink?

Ans. I rewrote them to make them plainer.

Q. 41. Were those entries in ink, thus rewrittten in this book, written while you were at work at Milltown?

Ans. Yes, sir.

[*Complainants' counsel requests the examiner to make a copy of all the entries referred to in the three books, the same to be put in evidence, and marked "Exhibit Carns' Memorandum-Books.*]

Q. 42. During any of these visits home, after you left in the spring of 1871, did you sometimes call at Mr. Drawbaugh's shop, or at his house?

Ans. I did.

Q. 43. If you ever saw at the shop at Eberly's Mills any machines or contrivances which you understood Mr. Drawbaugh had got up, or which you understood at the time contained any inventions or improvements devised by him, please name some of them.

Ans. Hydraulic ram, machine for boring out mill-bush boxes, machine for turning the rollers that run in the mill-bush boxes, gas governors, blowers, nail-feeder, carpet-rag sewer, postage stamp canceler, mill-tram, stave-cutter, dial telegraph, steering apparatus for a vessel, water-wheel for Tehl's mill, chuck for holding the chambers of the faucets, machine to mill the lids to fit in the chambers, machine that drilled six holes at a time, run by a belt; reaper-knife section, machine for rounding leather pieces, used for fly-nets, as far as I know; drafts for a still-house, small engine and pump for the State lunatic asylum, force-pump, weather-guages, electric clock, machine for punching strainers, machine for cutting the thread on the induction pipe of the faucet, lamp-shade press, an attachment on a lathe for turning two points of the faucet, a milling machine to mill the skeleton of the mill-bush, where the rollers run in. That is about all I can remember just now.

Q. 44. You have mentioned several machines for making mill bushes and parts of mill bushes, did they make mill bushes there at the shop?

Ans. Yes, sir.

Q. 45. Whom did they make them for, and who used to come there to see about them, and who invented them, if you know?

Ans. They were made for the Mill Bush Company. Daniel Rupp mostly used to come there to see about them. Tehl invented them.

Q. 46. Did Daniel Rupp come there much about them?

Ans. For a while he did.

Q. 47. Did you ever do any work with Mr. Drawbaugh about the gas governors, and if so, what?

Ans. I did. I helped to fix up a large piece of pipe to make gas in, and pumped the bellows for to heat the coal to make the gas.

Q. 48. I observe in your memorandum-book some entries of work on nail-feeder. Was that the nail-feeder that Mr. Drawbaugh was getting up?

Ans. It was.

Q. 49. Who, if you know, was interested in that, and who used to come to see about it?

Ans. Christian Eberly was interested in it and came around.

Q. 50. Did you ever see Mr. Drawbaugh at work on his dial-telegraph, and if so, tell me what condition it was in, and what you saw of it?

Ans. I don't remember of seeing him work at it, but he explained it to me as taking the place of the telegraph; it was a round block and on the top of it the letters were placed in a circle around; the figures were to go inside of the circle of the letters; I do not remember whether the figures were on or not.

Q. 51. Was this dial thing put together and in operative condition as a working machine, and was it completed so that it would work, or what was its condition in this respect?

Ans. It was not; it was just simply a block having the letters on the face of it.

Q. 52. You say he spoke of its taking the place of the telegraph; what did he give you to understand would be its advantages over the telegraph?

Ans. He said that anyone could telegraph without having to learn it; he would use a hand or indicator that would turn around and point to any letter; that when you would want to telegraph you would point to the letters and the machine at the other end would work the same way, and you would use the figures the same as the letters.

Q. 53. Did he express himself as attaching much importance to the machine, if he should get it completed and working?

Ans. He said it would take the place of telegraph.

Q. 54. Whereabouts in the shop did you see these parts that you have just described?

Ans. Upstairs on the bench along the front side of the shop.

Q. 55. Whose bench was it—who worked there regularly?

Ans. It was the bench that most of the work of the shop was done on; that is, the woodwork; and when only one man worked it was the bench he used.

Q. 56. You have spoken of a steering apparatus for a vessel; who was trying to get that up and what was Mr. Drawbaugh trying to do about it?

Ans. A man by the name of Eckburn was getting it up and Drawbaugh would still give him his ideas upon it.

Q. 57. Did you have anything to do with the water-wheel for Tehl's mill; and if so, what?

Ans. I helped to fit it together and helped to put it in its place.

Q. 58. You have mentioned drafts for a still-house. What do you mean by that; who were they for, and who used to come to the shop to see about them?

Ans. Daniel Drawbaugh drawed drafts for a still-house. I do not know who they were for. I think Henry Drawbaugh used to come to see about them. They were designs for building, I think.

Q. 59. Tell me what sort of a thing the weather guage was, that you have mentioned.

Ans. A thin piece of wood bent and put in a case. A hand was attached to it that worked on a dial, and the different changes of the atmosphere would shrink or swell the wood and move the hand on the dial.

Q. 60. What sort of a thing was the electric clock that you have mentioned?

Ans. A large old-fashioned clock with a long pendulum, having two wires, one on either side of the pendulum. The pendulum swinging back and forward would touch one wire and then back to the other one, and in that way it was kept going.

Q. 61. Do you remember whether there was any other clock connected or said to be connected with it?

Ans. Drawbaugh told me that there was another clock connected with it, but I don't remember having seen it.

Q. 62. Do you remember whether there were any batteries connected with it?

Ans. There were glass jars sitting on the floor near the clock. I don't remember whether it was going or not.

Q. 63. Was there a clock downstairs to serve as a time-piece for the shop; and, if so, what was it?

Ans. There was. The works of a clock were taken out, and fastened on the wall. There was no case around it then.

Q. 64. Do you remember how they used to wind it—whether by a key or a chain?

Ans. A chain.

Q. 65. You have spoken of a lamp-shade press; did you do any work on that?

Ans. I did.

Q. 66. While you worked for the Drawbaugh Manufacturing Company, was there a fellow working there about your age, or a little younger than you, named John C. Smith, whose parents lived at Milltown?

Ans. There was.

Q. 67. Did he come there about the same time as you, or before you, or after you?

Ans. Before me.

Q. 68. Did he leave about the same time that you finally quit, or before that, or after that?

Ans. I don't know exactly when he quit. I think it was about the same time I quit.

Q. 69. Do you know where he went to work afterwards, or what he was doing afterwards when you next met him?

Ans. Firing on the Pennsylvania railroad.

Q. 70. Do you know a one-armed man named Michael Snyder, and did you ever see him around the shop while you were there?

Ans. I know the man; I think I have seen him around the shop while I was there.

Q. 71. Please look at the instruments now shown you marked "F," "B," "C," and "I." I will add for your information that the glass tumbler "F" was formerly better coated with white plaster inside, some of it having broken out since this case was begun; and that the tin can instrument B is said to have had one end covered or closed with a stretched bladder, the remains of which you see under the string, and its inside was also better coated with plaster-of-paris when first introuced into the case. And having examined the instruments tell me

whether you ever saw them or instruments substantially like them at Milltown, either in Mr. Drawbaugh's shop, or in his house.

Ans. I never seen anything like them.

Q. 72. Please to look now at the instrument marked "C reproduced," and tell me whether you ever saw an instrument substantially like that at Milltown, either at Mr. Drawbaugh's shop or at his house?

Ans. I did not.

Q. 73. Please to look at the other instruments which I now show you marked "A," "D," "E," "G," "O," "L," "M," "N," "Q," "H," "J," "K," "P," and tell me whether you ever saw any of these machines or any substantially like them at Milltown, either at Mr. Drawbaugh's shop, or at his house.

Ans. I never seen anything like them.

Q. 74. Please state whether you ever heard from Mr. Drawbaugh or any one else while you worked at Milltown, or during any of your subsequent visits there, that he had a talking machine, by which a person could transmit speech from one place to another by speaking at one end and listening at the other.

Ans. I don't remember of ever having heard anything.

Adjourned until December 19, 1882, at eleven, A. M.

DECEMBER 19, 1882, 11, A. M.

Examination resumed, pursuant to adjournment.

Present, Mr. Smith and Mr. Storrow for complainants and Mr. Hill for respondents.

Examination of Jacob Carns, by Mr. Storrow, continued:

Q. 75. State whether or not you ever heard from Hiram Drawbaugh that his uncle Daniel had a talking machine.

Ans. No, sir.

Q. 76. This present controversy began in the summer of 1880, that is, about two years and a half ago; I wish to know whether or not you had ever heard from any one before that time, that Daniel Drawbaugh had invented or claimed to have invented a talking machine by which what a person said at one place would be transmitted to, and heard at another through the means of electricity.

Ans. I had not.

Q. 77. You know what your means of observation and knowledge

were while you worked at Milltown, from August, 1868, to February, 1871, boarding during six months of the time at Mr. Drawbaugh's house. Please state whether Mr. Drawbaugh could have had talking machines and been in the habit of showing them generally to people at that time without your knowing of it.

[*Objected to by Mr. Hill, as calling for mere opinion and as leading.*]

Ans. I don't think he could.

Q. 78. You know also how intimate your relations were with Mr. Drawbaugh. Please state whether or not he could have had talking machines there during the two years and a half you were there, and you not known of it.

[*Same objection.*]

Ans. I don't think he could have had.

Q. 79. You know what your relations with him were, and you know what your position in the shop, was as a young man of eighteen or twenty. If he had occasion to experiment much by having some one to talk or sing into a talking machine, would he naturally have asked you to assist him in that way?

[*Same objection.*]

Ans. I think he would have.

Q. 80. You have testified that after you quit working at the shop in the spring of 1871, you occasionally made calls on him when you were at home on visits. I want to ascertain a little more definitely what your recollection is as to what calls you made on him subsequently. It appears from your 23d answer that the first time you went home was in January, 1872, for about a three weeks' visit, on the occasion of your father's death; and again, from your 25th answer, that you were at home for about three weeks in May and June, 1872; if you remember, as a fact, that you called on him during either of those visits, please state what your recollection is upon that point.

Ans. I was there in January, 1872. I was there when he had a very sick child. The child was a mere skeleton.

Q. 81. It appears from the testimony of Mr. Zaccheus Bowman, a witness for the defense, on page 639 of respondents' printed record, that he saw at Mr. Drawbaugh's house a child that had dwindled away to a mere skeleton, in 1871 or 1872—along there; have you any recollection at which of your visits you saw that child; and, if so, what is your recollection about it?

Ans. I have no recollection which visit it was.

Q. 82. Will you please state any subsequent visits which you remember to have made there, naming some occurence, or some person whom you saw there, so as to identify the visits, if possible?

Ans. I was there twice when Haucks had the shop; I was there in December, 1875.

Q. 83. How do you remember about Haucks having the shop when you were there? State something that you remember about it.

Ans. I was there in the shop and there was a man around in the shop; I asked Drawbaugh who it was; he either said it was one of the Haucks or one of their men; I don't remember which; it was the first time I had been there after Haucks had it.

Q. 84. Was the shop running, or what was the man doing, if you remember?

Ans. I do not remember whether the shop was running; I can't say positively what the man was doing.

Q. 85. What makes you remember visiting there in December, 1875, by which I suppose you refer to the three weeks' visit at home at that time, mentioned in your 36th answer?

Ans. It was a warm winter; I did not have anything to do around the house and went to Milltown.

Q. 86. You do not seem ever to have been at home again for anything more than a few days at a time, except on a three weeks' visit in April, 1877, on the occasion of your mother's death, and on a three weeks' visit in May, 1878, when you and her administrator settled up accounts. Do you remember whether you called at Mr. Drawbaugh's shop during either of those two visits; and if so, state what your recollection is upon that point?

Ans. I don't think I was there.

Q. 87. I wish you would look at the entries in your memorandum-book, referred to in your 5th answer, and tell me what the letters "H" and "M" and the figures in each column mean?

Ans. The figures in the first column are the day of the month; in the second column of figures H stands for hours, and the figures under it mean the number of hours worked each day. M stands for meals, and the number underneath stands for the number of meals that I would owe for.

Q. 88. Why did you keep an account of your meals?

Ans. I boarded by the meal.

Q. 89. Did you pay that way while you boarded at Mr. Drawbaugh's?

Ans. I did.

Q. 90. How much did you pay him a meal?

Ans. I think it was twenty cents; I am not positive.

Q. 91. Please look at the entries in your second book, page 13, which are referred to in your 9th answer, and tell me what the separate columns of figures there mean?

Ans. The first column of figures means the number of pieces worked each day, and also the time of day-work. The first line means six faucets made and two meals taken on the second day of the month, which was Tuesday; the third line means one half a day of day-work at the dam, on the third, which was Wednesday; the same day, the third, I made six faucets and eat three meals.

Cross-examined by Mr. Hill.

Cross-Q. 92. How long ago was it that you were last at Drawbaugh's shop?

Ans. December, 1875, is the last time that I remember.

Cross-Q. 93. In December, 1875, were you there, once or more than once?

Ans. I can't say.

Cross-Q. 94. How long were you there at that time?

Ans. About two or three hours.

Cross-Q. 95. Do you mean two or three hours in the shop, or two or three hours in the village and shop?

Ans. At the shop and Drawbaugh's house.

Cross-Q. 96. How much of that time did you spend at the shop?

Ans. Nearly all of it.

Cross-Q. 97. Whom did you see at the shop?

Ans. No one but Drawbaugh.

Cross-Q. 98. What was Drawbaugh doing?

Ans. I don't remember.

Cross-Q. 99. In what part of the shop was he?

Ans. Up stairs at the benches.

Cross-Q. 100. Was he at work?

Ans. I don't remember what he was doing. He did not do anything while I was there.

Cross-Q. 101. Was he doing something when you came there?

Ans. I do not remember.

Cross-Q. 102. You don't know then, but that he was working on talking machines when you came there at that time, do you?

Ans. I don't remember.

Cross-Q. 103. Did you have any conversation with him while you were there that time?

Ans. I did.

Cross-Q. 104. What was it, so far as you remember?

Ans. About my work in Altoona, and how I liked it there, and how they worked.

Cross-Q. 105. Is that all that you can remember of the conversation?

Ans. It is.

Cross-Q. 106. What did you see there in the shop at that time?

Ans. I don't remember of having seen anything but what was in the shop other times I had went there.

Cross-Q. 107. What rooms were you in at that time?

Ans. I was in the down stairs room and up stairs.

Cross-Q. 108. How many rooms were there up stairs on the second floor, at that time?

Ans. I don't remember.

Cross-Q. 109. Do you remember being in more than one room on the second floor at that time?

Ans. I do not.

Cross-Q. 110. Do you remember which one of the rooms on the second floor it was that you were in then?

Ans. The room that had the benches in.

Cross-Q. 111. All the rooms had benches in; can't you designate the room in any other way?

Ans. The room you came into on coming up from downstairs.

Cross-Q. 112. Coming up by the stairs inside of the building; do you mean?

Ans. Yes, sir.

Cross-Q. 113. Did those stairs open directly into the room, or into an entry at their upper end?

Ans. I don't remember.

Cross-Q. 114. How large was that room that you were in on the second floor at that time?

Ans. I can't say.

Cross-Q. 115. What did you see in it beside the bench or benches?

Ans. I don't remember of seeing anything in particular, except some tools and pieces lying out on the bench?

Cross-Q. 116. Pieces of what?

Ans. I can't say in particular.

Cross-Q. 117. Did you see any clock there in the rooom at that time?

Ans. I don't remember.

Cross-Q. 118. For all you know, then, there may have been cart-loads of talking machines in the other two rooms at that time; may there not?

Ans. I don't remember whether I was in the rooms, or not.

Cross-Q. 119. Will you now tell me when you were at Drawbaugh's shop last before December, 1875.

Ans. I was there when the Haucks had it, but can't tell which time.

Cross-Q. 120. Please tell me again how you know it was when the Haucks had it?

Ans. Drawbaugh told me so.

Cross-Q. 121. Who was there at that time?

Ans. Drawbaugh and a man down stairs that he either said was one of Hauck's men or one of the Haucks.

Cross-Q. 122. Can you fix the year when you made that visit?

Ans. It was on one of my trips home; I can't tell which one.

Cross-Q. 123. State what trips you made home between the first day of July, 1873, and the first day of December, 1875?

Ans. I can't say; I was working in Harrisburg part of that time, and went back and forward every week.

Cross-Q. 124. You lived at Shiremanstown, did you not?

Ans. I did.

Cross-Q. 125. Drawbaugh's shop is nearly a mile from the road leading from Harrisburg to Shiremanstown; is it not?

Ans. It is.

Cross-Q. 126. By saying that you were working at Harrisburg part of that time, and went back and forward every week, do you mean that you went back and forward between Harrisburg and Shiremanstown?

Ans. Most of the time.

Cross-Q. 127. Do you remember being at Drawbaugh's shop more than once while the Hauck's were there?

Ans. I only remember of being there once while there was one of

Hauck's men there. I was there afterwards, but don't know whether Hauck's had charge of the shop then or not.

Cross-Q. 128. You mean you were there afterwards in December, 1875?

Ans. I was there in December, 1875. I can't say whether I was there at any other time after the time when I saw Hauck's man, or not.

Cross-Q. 129. You have no recollection of being there between the time when you saw Hauck's man there and your visit of December, 1875, have you?

Ans. I don't remember.

Recess for lunch until 2.30, P. M.

DEC. 19, 1882, 2, P. M.

Examination resumed pursuant to adjournment.

Present, same counsel.

Cross-examination of Jacob Carns, by Mr. Hill, continued:

Cross-Q. 130. Then you can't tell me whether that visit that you made while the Hauck's were there was in 1873, 1874, or 1875; can you?

Ans. I don't know what date the Hauck's had the shop.

Cross-Q. 131. The Hauck's took the shop in July, 1873; does that assist you to fix the time?

Ans. It was one of my visits there after the Hauck's had it. I can't tell which one.

Cross-Q. 132. Now, referring to that visit when you saw Hauck or the Hauck workman there, how happened you to go there then?

Ans. I went there to see Dan and the family; him and I had always been very intimate.

Cross-Q. 133. How long were you in the shop that time?

Ans. I don't remember.

Cross-Q. 134. Did you go to his house also at that time?

Ans. I don't remember.

Cross-Q. 135. Did you call on any other family at Eberly's Mills at that time?

Ans. I don't think I did.

Cross-Q. 136. In what part of the shop were you at that time?

Ans. Up stairs.

Cross-Q. 137. In what rooms up stairs?

Ans. The room where the benches were in when you come up the stairs.

Cross-Q. 138. Do you mean the room that the inside stairs open into, on the second floor?

Ans. I mean the room that the benches were in, one bench being along the front of the shop and one at the end toward town.

Cross-Q. 139. What do you call the front of the shop?

Ans. The side facing the dam, where the street comes down from town.

Cross-Q. 140. Do you mean the west side?

Ans. I don't remember in what direction the shop is situated.

Cross-Q. 141. How large a room was that?

Ans. I don't remember.

Cross-Q. 142. Were you in any other room on that floor, except that, at that time?

Ans. I don't remember that I was.

Cross-Q. 143. Then you don't know what was in the other rooms at that time; do you?

Ans. I had seen the large clock in the room or office up stairs, but can't say which times I had seen it.

Cross-Q. 144. You haven't any distinct recollection of seeing it at that particular time; have you?

Ans. No, sir.

Cross-Q. 145. Will you, then, please answer my 143d question more specifically.

Ans. I do not know positively what was in the other rooms at that time.

Cross-Q. 146. You say that you have no recollection of being in the other rooms at that time; do you not?

Ans. I had been in the other room or office, but I can't tell which time or times. I may have been in this time.

Cross-Q. 147. I want to separate fact from guess-work. Will you please tell me whether you have any definite recollection of being in any other room on the second floor at that particular visit, except the room you have mentioned.

[*Objected to by Mr. Storrow, because the witness has already, in answer to interrogatory 142, said that he does not remember.*]

Ans. I had been in the other room, but cannot say positively whether it was this time, or not.

[*Answer objected to by Mr. Hill as not responsive, and question repeated.*]

Witness continues: I don't remember which times I was in the other room.

Cross-Q. 148. If you don't remember being in those rooms at that time, then of course you have no knowledge as to what was in those other rooms at that particular time; have you?

Ans. I had seen a large clock, and some wires in that room attached to the clock; I can't tell on which of my visits I seen it.

Cross-Q. 149. You don't know that you saw the clock and wires at that time; do you?

Ans. It might have been this time; I am not positive.

Cross-Q. 150. Mr. Carns, I propose to have my questions answered and not evaded; I did not ask you what might have been, but I want to know what you can positively swear to and what you cannot—what you remember and what you do not remember of that particular visit; I now repeat my question: have you any definite recollection or knowledge of seeing anything at that time except in the one room which you have testified you were in?

[*Objected to by Mr. Smith, because the question assumes that the witness has answered the preceding questions evasively, and because it is an attempt to force the witness to give a positive answer on a matter as to which the witness has stated, in substance, that he does not know positively what the fact is; and he requests the examiner to instruct the witness that he is not required to give a positive answer as to matters of which he is not positive.*

Respondents' counsel replies; first, that the court can easily judge whether the cross-questions have been evaded; and, secondly, that the witness can give a positive answer to the question as propounded; the question drawing the distinction clearly between the fact and the witness' present recollection, and merely requiring him to answer whether or not he has a present recollection of having seen anything in either of those other rooms at that time, a question which can easily be answered yes or no.

Ans. I don't remember anything.

Cross-Q. 151. Now referring to this particular visit when you saw

Hauck, or his workman there, mention everything that you definitely recollect seeing there at that time, as distinguished from any other time?

Ans. I had seen the clock with wires attached; that was new to me, but I am not positive that this was the time.

Cross-Q. 152. Is this the best answer you can give to my question?

Ans. I can't say positively that I did not see the clock at that time.

Cross-Q. 153. Well, is this the best answer you can give to my 151st question?

Ans. I had seen the clock, and I can't tell positively when I seen it there; it may have been this time; I don't remember.

Cross-Q. 154. Is this the best answer you can give to my 151st question?

Ans. On my visits there I seen the clock with wire attachment, which was new to me, but I do not remember that I seen it at this time.

Cross-Q. 155. I will vary the question a little to enable you to comprehend it. Can you swear that you saw anything else there at that particular visit as distinguished from all other visits; if so, what was it?

[*Counsel for complainants inquires whether the question has reference to things which the witness may have seen at that time and never saw at any other time.*

Respondents' counsel says that if he had asked the question referred to by complainants' counsel, he should have put it in about the words used by complainants' counsel. The question propounded has no such meaning, but merely seeks to distinguish what the witness can swear to having seen at that particular time, answering from his memory of the visit, and not from inference or guess work.]

Ans. I cannot.

Cross-Q. 156. Did you have any conversation with Mr. Daniel Drawbaugh at that particular visit, the purport of which you now remember?

Ans. Nothing in particular.

Cross-Q. 157. If you remember anything of the conversation which you had with him at that particular visit, please repeat it?

Ans. No more than general conversation. He would ask how I was getting along and what I was doing. I do not remember of anything of importance.

Cross-Q. 158. What was Daniel Drawbaugh doing while you were at the shop at that visit?

Ans. I don't remember.

Cross-Q. 159. Now please go back in your memory to the last visit which you made to his shop before that, and of which you have any definite or positive recollection, and state when that was; how you happened to go there at such time; and all that you remember seeing, hearing, or doing while at the shop on such visit.

Ans. I was there when the child was sick, and I was there when my father died; but I can't tell whether this was two visits, or whether I seen the child on my visit at the time of my father's death.

Cross-Q. 160. What was the date of your father's death?

Ans. January 10th, 1872.

Cross-Q. 161. At the time when you were there, and saw Mr. Drawbaugh's little girl sick, do you remember whether he had not, within a couple of months, lost two of his children by death?

Ans. I think Emma had died.

Cross-Q. 162. Just before you saw the little girl sick, and extremely emaciated?

Ans. There were different ones sick in his family. Emma had died before that, but I can't say just how long.

Cross-Q. 163. Had you been there before, since Emma's death?

Ans. I was there when father died and I was there when the child was nearly a skeleton, but I don't know if this was one visit or two visits.

Cross-Q. 164. Were you at Mr. Drawbaugh's house at the time of your visit when your father died, or at the time of your visit when you saw the child that as almost a skeleton?

Ans. I was.

Cross-Q. 165. If they were two visits, were you at his house both times?

Ans. I was.

Cross-Q. 166. Then you were at his house about January 10th, 1872, the time of your father's death, and it appears from Mr. Drawbaugh's testimony, page 782 of respondent's printed record, that Emma died November 18th, 1871; have you any recollection of being at Mr. Drawbaugh's house between November 18th, 1871, and January 10th, 1872?

Ans. I was not there.

Cross-Q. 167. Where were you working at the time of your father's death in January, 1872?

Ans. At Akron, Ohio.

Cross-Q. 168. When was the first time that you came east again from Akron, after January, 10th, 1872?

Ans. May 28th, 1872, I came to Harrisburg; I got home on the 29th.

Cross-Q. 169. As your visit to Mr. Drawbaugh's shop and house about January 10th, 1872, was the first visit there after Emma died, I suppose there was considerable conversation about her sickness and death; was there not, or have you any recollection at all about it?

Ans. I remember of them telling me that she had died.

Cross-Q. 170. Do you remember of their telling you about another member of the family had died?

Ans. There were others died, but I don't remember of them telling about it at this time.

Cross-Q. 171. I understand you that you were a friend of the family; were you not?

Ans. I was.

Cross-Q. 172. If you visited their house on any occasion, and they told you that two of their family had died within two months, you being a friend of the family, would not such conversation be likely to make a pretty strong and lasting impression upon your memory?

Ans. I remember of Emma, but the children that were smaller I would not remember.

Cross-Q. 173. Will you give the names of all of Mr. Drawbaugh's children that you had any knowledge of prior to your father's death?

Ans. Emma, Laura, and one they called Olie, but I don't know whether that was the right name or not, and, I think, Harry. That is all I remember now.

Cross-Q. 174. Tell me which of these children were the older and which the younger, giving them in their order from the oldest down.

Ans. Emma was the oldest; Laura next and I don't know which of the other two was the next, Harry or Olie.

Cross-Q. 175. What was the name of the little one who was a skeleton?

Ans. I don't know.

Cross-Q. 176. Was it one of those whose names you have given?

Ans. I do not think it was.

Cross Q. 177. Do you know certainly whether it was or not?

Ans. I am very sure it was not.

Cross-Q. 178. Did you ever know that he had a child named Bella?

Ans. I don't remember of any now.

Cross-Q. 179. Did you ever know that he had a child named Ida?

Ans. They may have had middle names and I have forgotten them.

Cross-Q. 180. You have no recollection of the name of Ida in his family?

Ans. I recollect the name, but can't tell the person.

Cross-Q. 181. At the time of your visit there in January, 1872, do you remember their telling you that two of their children had died the same week, a short time before?

Ans. I remember of Emma; the others I do not remember.

Cross-Q. 182. If it were material in this case to prove that from 1866 down to nearly the beginning of 1872 Mr. Daniel Drawbaugh had a child named Ida, that fact could not be proved by your testimony, could it?

Ans. Not at this time.

Cross-Q. 183. And yet you were a friend of the family, and during a portion of that period boarded in the house; did you not?

Ans. I did.

Cross-Q. 184. I will inform you that Mr. Drawbaugh had a daughter named Ida, who died, at the age of about nine years, in November, 1871, in the same week that her sister Emma died; does that aid your recollection, and do you now remember the child, or remember hearing of her death so near that of her sister?

Ans. I do.

Cross-Q. 185. Which do you remember—do you remember the child herself personally, or only the fact of her death so near that of her sister?

Ans. I remember the child.

Cross-Q. 186. But you don't remember the circumstance of her death so near that of her sister, do you?

Ans. I knew that others had died, but do not know which one.

Cross-Q. 187. And do not remember the fact that two of them died in the same week?

Ans. There were several other children died about the same time, and I do not remember of Drawbaugh's having two in the same week.

Cross-Q. 188. Now let us come again to the visit which you made to the shop about the 10th of January, 1872. How long were you in the shop at that visit?

Ans. I don't think I was there more than three hours.

Cross-Q. 189. You remember being in the shop; do you?

Ans. I do.

Cross-Q. 190. Who else was in the shop besides yourself at that time?

Ans. I think a man by the name of Denlinger, who lived close to George Heck's. He had been hurt in Harrisburg. I am not sure that that is his name.

Cross-Q. 191. What was his business, and where does he live now?

Ans. I don't remember what his business was. I don't know where he lives now.

Cross-Q. 192. What was his first name?

Ans. I do not remember.

Cross-Q. 193. How was he hurt, and what was his injury?

Ans. I think he fell on the side-walk or through a side-walk in Harrisburg. I do not remember what his injury was.

Cross-Q. 194. What was he doing at Drawbaugh's shop at the time referred to?

Ans. I don't think he was doing anything.

Cross-Q. 195. If you remember the conversation between you and Mr. Drawbaugh at the time of that January, 1872, visit, please state all of it that you remember.

Ans. He had asked me where I was—how I was getting along; I can't say positively that he spoke of anything in particular at this time.

Cross-Q. 196. This last answer of yours states all the conversation that passed between you and Mr. Drawbaugh at the shop at that time, that you now have any recollection of; does it?

Ans. He spoke about Emma and about how things had been going in the shop; that is all I remember now.

Cross-Q. 197. What did he say about how things had been going in the shop? State all that you remember that he said about that.

Ans. I don't remember anything more than that there was nothing doing around here—not much of anything.

Cross-Q. 198. What was he doing in the shop at that time while you were there?

Ans. I don't remember.

Cross-Q. 199. Were you on the second floor of the shop at that visit?

Ans. I was.

Cross-Q. 200. In what rooms on the second floor do you remember of being at that visit?

Ans. The room you came into coming upstairs.

Cross-Q. 201. Is that all that you remember being into at that visit?

Ans. I was in the office, but I do not remember that I was in at this visit there.

Cross-Q. 202. Please do not mix up other visits with this one, but state just what you remember about this particular visit; do you recollect of being in more than one room on the second floor on this particular visit?

Ans. I do not remember.

Cross-Q. 203. Do you recollect that at the time of your seeing the skeleton child you were told that she had become sick at the same time with Emma, and with the same disease of which Emma died, and that she had not yet recovered?

Ans. I do not remember.

Cross-Q. 204. How long had you been at Akron at the time of your father's death, January 10, 1872?

Ans I was in Akron from the 23d of December, 1871.

Cross-Q. 205. When did you cease working for the Drawbaugh Faucet Company at Eberly's Mills?

Ans. My last account is February 4th, 1871.

Cross-Q. 206. Do you remember any particular visit that you made to Daniel Drawbaugh's shop between February 4th, 1871, and January 10th, 1872?

Ans. I do not.

Adjourned until December 20, 1882, at 10, A. M.

DECEMBER 20, 1882, 10, A. M.

Examination resumed, pursuant to adjournment.

Present, Mr. Smith for complainants, and Mr. Hill and Mr. Jacobs for respondents.

Cross-examination of Jacob Carns, by Mr. Hill, continued:

Cross-Q. 207. If I understand your testimony in chief correctly, you went to work for the Drawbaugh Faucet Company, at Eberly's Mills, August 10th, 1868; worked there continuously until August 7th, 1869; were absent from August 7th, 1869, to October 11th, 1869; went to work again for the company October 11th, 1869, and worked continuously until February 4th, 1871, your employment there thus consisting of two periods, to wit: From August 10th, 1868, to August 7th,

1869; and from October 11th, 1869, to February 4th, 1871, and during the first period you boarded in the family of Daniel Drawbaugh from February 27th, 1869, to August 7th, 1869; is my understanding correct?

Ans. It is.

Cross-Q. 208. Were you ever in Mr. Drawbaugh's shop prior to your employment there, August 10th, 1868?

Ans. I do not remember.

Cross-Q. 209. When you first went to work there, August 10th, 1868, in what building were the operations of the company carried on?

Ans. In the building down at the creek, right where the dam is.

Cross-Q. 210. Do you mean the same building which Mr. Drawbaugh has since occupied as his shop—the building in which the Haucks carried on their business?

Ans I do.

Cross-Q. 211. Name all the workmen who were employed in that building from the 10th of August, 1868, to the 4th of February, 1871.

Ans. I do not remember the names of all the workmen.

Cross-Q. 212. Give all the names that you do remember.

Ans. Daniel Drawbaugh, John Drawbaugh, Hiram Drawbaugh, John Smith, Henry Snavely, Arthur Umberger, Charles Umberger, Luther Gorgas, Samuel Zimmerman. I think there was one by the name of Abner Cadow, and others. I cannot give their names. Richard Eckburn, John Schroeder also, that is all I remember.

Cross-Q. 213. Who among those workmen were your most intimate friends and companions at that time?

Ans. Daniel Drawbaugh, Hiram Drawbaugh, Charles Umberger, Henry Snavely, and John Drawbaugh. I mean the squire.

Cross-Q. 214. Had you any intimate companions in the town at that time who were not workmen there? If so, give their names.

Ans. I had none, no more than socially. I should have mentioned John Smith's name in my previous answer.

Cross-Q. 215. Mention the names of those with whom you were most intimate socially, and who were not workmen there.

Ans. I don't understand the question just right. Do you mean in the town or around the country, or do you mean Shiremanstown included?

Cross-Q. 216. I mean in and around Eberly's Mills.

Ans. David Ditlow, a man by the name of Good, who kept a store there, Alfred Ditlow, George Drawbaugh; that is all I remember.

Cross-Q. 217. Give the names of those persons at Shiremanstown and vicinity with whom you were most intimate from 1867 to 1872 or during any portion of that time.

Ans. S. L. Pretz, David Mohler, Jacob Langsdorf, Jacob Rupp, Henry Rupp, George Fair, Samuel Bates, Dr. Mosser, Jr., and Dr. Mosser, Sr., Luther Gorgas, and others.

Cross-Q. 218. Do you remember a man named E. B. Hoffman, who worked for the Drawbaugh Manufacturing Company in the summer of 1868, and who testifies, on page 503 of respondent's printed record, that he saw Daniel Drawbaugh at that time working on a machine which he called a talking-machine?

Ans. I do not.

Cross-Q. 219. If it were material in this case to prove that there was such a man as E. B. Hoffman there in Drawbaugh's shop at work at any time while you were there, it could not be proved by your testimony; could it?

Ans. It could not.

Cross-Q. 220. You were eighteen years old when you went to work there and twenty-one when you quit; were you not?

Ans. About those ages; yes, sir.

Cross-Q. 221. Did you learn your trade there or had you learned it before?

Ans. I learned it there.

Cross-Q. 222. In what part of the shop did the Drawbaugh Manufacturing Company conduct its manufacturing operations?

Ans. We worked on three floors and kept the patterns on the fourth.

Cross-Q. 223. Was the building a three story building?

Ans. There was a basement, two stories and a garret.

Cross-Q. 224. What part of the business was conducted in the basement?

Ans. They had a grindstone there and the induction pipes of the faucets were ground there before the thread was cut on them.

Cross-Q. 225. What part of the business was conducted in the first story—the story next above the basement?

Ans. It was the room where the turning and fitting of the faucets, pumps, mill-bushes, and repair work was done in.

Cross-Q. 226. What part of the business was conducted in the second story of the building?

Ans. Making the patterns, painting faucets, packing faucets, storing faucets, turning wood; and most of the wood-work was done here.

Cross-Q. 227. Did you do any work at pattern-making, wood-working, painting, packing or storing?

Ans. I painted, packed and stored.

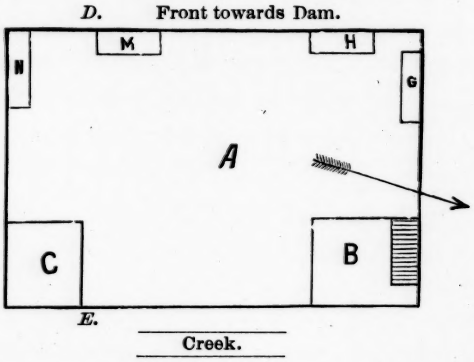
Cross-Q. 228. How many rooms was the second story divided into at that time?

Ans. Three.

Cross-Q. 229. Please make a sketch illustrating the division of that floor into three rooms as it was then.

Ans. I will.

(Witness makes the following sketch upon the record:)



Cross-Q. 230. Please describe the sketch, using reference letters.

Ans. A is the main room, B is the office, C is the storing-room for faucets, D is the front of the shop facing the dam, E is the back of the shop, F is the stairway coming up from the first story to the second story in the room B.

Cross-Q. 231. In which one of those rooms did you do the painting?

Ans. In the main room A.

Cross-Q. 232. In which one did you do the packing?

Ans. I packed in the main room A to send away, and packed in the room C for storage.

Cross-Q. 233. What was the room B used for?

Ans. For the general office of the shop. The books and drawings and other thing were kept in there.

Cross-Q. 234. In which room was the wood-working done?

Ans. The main room A.

Cross-Q. 235. Where were the patterns kept?

Ans. On the garret. The floor above this one.

Cross-Q. 236. Where were they designed and made?

Ans. I don't know where they were all made, nor designed.

Cross-Q. 237. What did Mr. Daniel Drawbaugh do about the business of the Drawbaugh Manufacturing Company?

Ans. He kept the time, part of the time, and got out the designs to do the work.

Cross-Q. 238. Where did he do his part of the business?

Ans. I don't understand the question.

Cross-Q. 239. What room did he occupy in doing that part of the business that he attended to?

Ans. He was all over the shop, and most of the time in main room A and room B.

Cross-Q. 240. In what story of the shop were you employed most of the time?

Ans. The first.

Cross-Q. 241. Did you do any work in the basement?

Ans. I did.

Cross-Q. 242. Did you see any electric clock there in the building while you worked there for the Drawbaugh Manufacturing Company?

Ans I don't remember.

Cross-Q. 243. Did you see any stamp-cancellers there while you worked there for said company?

Ans. I did.

Cross-Q. 244. If it were material to prove in this case that there was an electric clock there at the shop between August 10th, 1868, and February 4th, 1871, it could not be proved by your testimony; could it?

Ans. It could not.

Cross-Q. 245. Did you hear anything said while you worked there about Mr. Drawbaugh's having invented an electric clock?

Ans. I don't remember.

Cross-Q. 246. If it were material to prove in this case that his invention of an electric clock was a matter known and talked about in the community while you worked there, it could not be done by your testimony; could it?

Ans. It could not.

Cross-Q. 247. While you were boarding at Mr. Daniel Drawbaugh's

Ans. Making the patterns, painting faucets, packing faucets, storing faucets, turning wood; and most of the wood-work was done here.

Cross-Q. 227. Did you do any work at pattern-making, wood-working, painting, packing or storing?

Ans. I painted, packed and stored.

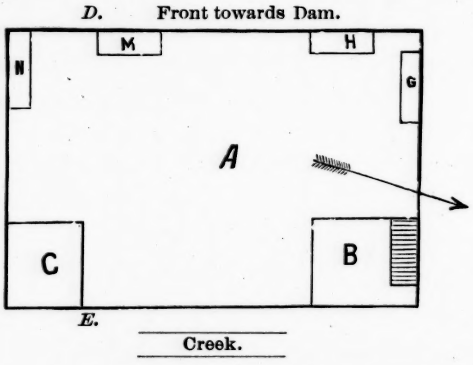
Cross-Q. 228. How many rooms was the second story divided into at that time?

Ans. Three.

Cross-Q. 229. Please make a sketch illustrating the division of that floor into three rooms as it was then.

Ans. I will.

(Witness makes the following sketch upon the record:)



Cross-Q. 230. Please describe the sketch, using reference letters.

Ans. A is the main room, B is the office, C is the storing-room for faucets, D is the front of the shop facing the dam, E is the back of the shop, F is the stairway coming up from the first story to the second story in the room B.

Cross-Q. 231. In which one of those rooms did you do the painting?

Ans. In the main room A.

Cross-Q. 232. In which one did you do the packing?

Ans. I packed in the main room A to send away, and packed in the room C for storage.

Cross-Q. 233. What was the room B used for?

Ans. For the general office of the shop. The books and drawings and other thing were kept in there.

Cross-Q. 234. In which room was the wood-working done?

Ans. The main room A.

Cross-Q. 235. Where were the patterns kept?

Ans. On the garret. The floor above this one.

Cross-Q. 236. Where were they designed and made?

Ans. I don't know where they were all made, nor designed.

Cross-Q. 237. What did Mr. Daniel Drawbaugh do about the business of the Drawbaugh Manufacturing Company?

Ans. He kept the time, part of the time, and got out the designs to do the work.

Cross-Q. 238. Where did he do his part of the business?

Ans. I don't understand the question.

Cross-Q. 239. What room did he occupy in doing that part of the business that he attended to?

Ans. He was all over the shop, and most of the time in main room A and room B.

Cross-Q. 240. In what story of the shop were you employed most of the time?

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Ans. It could not.

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Ans. I don't remember.

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Ans. It could not.

Cross-Q. 247. While you were boarding at Mr. Daniel Drawbaugh's

house, from February 27th, 1869, to August 7th, 1869, did he have any domestics employed in the family?

Ans. He had.

Cross-Q. 248. Who were they?

Ans. I think her name was Maggie Darr.

Cross-Q. 249. Was she employed there all the time that you boarded there?

Ans. No, sir.

Cross-Q. 250. During what part of that time was she employed there?

Ans. During the time that several of us boarded there.

Cross-Q. 251. Was that when you first went there to board, or towards the last of your boarding there?

Ans. The first part of my time.

Cross-Q. 252. She was employed in the family there when you first went there to board; was she?

Ans. It was some time between when I first went there and when the other boarders left.

Cross-Q. 253. Who boarded there besides yourself?

Ans. Charles Umberger. I don't remember the names of the others.

Cross-Q. 254. Were they workmen at the shop?

Ans. They were.

Cross-Q. 255. How many boarded there besides you and Charles Umberger?

Ans. I don't remember.

Cross-Q. 256. While you boarded there did you also room there?

Ans. I did.

Cross-Q. 257. Did you room alone or have a room-mate?

Ans. I was not alone.

Cross-Q. 258. Who roomed with you?

Ans. I don't remember.

Cross-Q. 259. Did any of the other boarders room there besides yourself?

Ans. They did.

Cross-Q. 260. Who of them roomed there?

Ans. All that boarded there.

Cross-Q. 261. How long did these boarders stay there?

Ans. I don't remember.

Cross-Q. 262. Your memory seems to be clearer about the hired girl than anybody else there; why is that?

Cross-Q. 179. Did you ever know that he had a child named Ida?

Ans. They may have had middle names and I have forgotten them.

Cross-Q. 180. You have no recollection of the name of Ida in his family?

Ans. I recollect the name, but can't tell the person.

Cross-Q. 181. At the time of your visit there in January, 1872, do you remember their telling you that two of their children had died the same week, a short time before?

Ans. I remember of Emma; the others I do not remember.

Cross-Q. 182. If it were material in this case to prove that from 1866 down to nearly the beginning of 1872 Mr. Daniel Drawbaugh had a child named Ida, that fact could not be proved by your testimony, could it?

Ans. Not at this time.

Cross-Q. 183. And yet you were a friend of the family, and during a portion of that period boarded in the house; did you not?

Ans. I did.

Cross-Q. 184. I will inform you that Mr. Drawbaugh had a daughter named Ida, who died, at the age of about nine years, in November, 1871, in the same week that her sister Emma died; does that aid your recollection, and do you now remember the child, or remember hearing of her death so near that of her sister?

Ans. I do.

Cross-Q. 185. Which do you remember—do you remember the child herself personally, or only the fact of her death so near that of her sister?

Ans. I remember the child.

Cross-Q. 186. But you don't remember the circumstance of her death so near that of her sister, do you?

Ans. I knew that others had died, but do not know which one.

Cross-Q. 187. And do not remember the fact that two of them died in the same week?

Ans. There were several other children died about the same time, and I do not remember of Drawbaugh's having two in the same week.

Cross-Q. 188. Now let us come again to the visit which you made to the shop about the 10th of January, 1872. How long were you in the shop at that visit?

Ans. I don't think I was there more than three hours.

Cross-Q. 189. You remember being in the shop; do you?

Ans. I do.

Cross-Q. 190. Who else was in the shop besides yourself at that time?

Ans. I think a man by the name of Denlinger, who lived close to George Heck's. He had been hurt in Harrisburg. I am not sure that that is his name.

Cross-Q. 191. What was his business, and where does he live now?

Ans. I don't remember what his business was. I don't know where he lives now.

Cross-Q. 192. What was his first name?

Ans. I do not remember.

Cross-Q. 193. How was he hurt, and what was his injury?

Ans. I think he fell on the side-walk or through a side-walk in Harrisburg. I do not remember what his injury was.

Cross-Q. 194. What was he doing at Drawbaugh's shop at the time referred to?

Ans. I don't think he was doing anything.

Cross-Q. 195. If you remember the conversation between you and Mr. Drawbaugh at the time of that January, 1872, visit, please state all of it that you remember.

Ans. He had asked me where I was—how I was getting along; I can't say positively that he spoke of anything in particular at this time.

Cross-Q. 196. This last answer of yours states all the conversation that passed between you and Mr. Drawbaugh at the shop at that time, that you now have any recollection of; does it?

Ans. He spoke about Emma and about how things had been going in the shop; that is all I remember now.

Cross-Q. 197. What did he say about how things had been going in the shop? State all that you remember that he said about that.

Ans. I don't remember anything more than that there was nothing doing around here—not much of anything.

Cross-Q. 198. What was he doing in the shop at that time while you were there?

Ans. I don't remember.

Cross-Q. 199. Were you on the second floor of the shop at that visit?

Ans. I was.

Cross-Q. 200. In what rooms on the second floor do you remember of being at that visit?

Ans. The room you came into coming upstairs.

Cross-Q. 201. Is that all that you remember being into at that visit?

Ans. I was in the office, but I do not remember that I was in at this visit there.

Cross-Q. 202. Please do not mix up other visits with this one, but state just what you remember about this particular visit; do you recollect of being in more than one room on the second floor on this particular visit?

Ans. I do not remember.

Cross-Q. 203. Do you recollect that at the time of your seeing the skeleton child you were told that she had become sick at the same time with Emma, and with the same disease of which Emma died, and that she had not yet recovered?

Ans. I do not remember.

Cross-Q. 204. How long had you been at Akron at the time of your father's death, January 10, 1872?

Ans I was in Akron from the 23d of December, 1871.

Cross-Q. 205. When did you cease working for the Drawbaugh Faucet Company at Eberly's Mills?

Ans. My last account is February 4th, 1871.

Cross-Q. 206. Do you remember any particular visit that you made to Daniel Drawbaugh's shop between February 4th, 1871, and January 10th, 1872?

Ans. I do not.

Adjourned until December 20, 1882, at 10, A. M.

DECEMBER 20, 1882, 10, A. M.

Examination resumed, pursuant to adjournment.

Present, Mr. Smith for complainants, and Mr. Hill and Mr. Jacobs for respondents.

Cross-examination of Jacob Carns, by Mr. Hill, continued:

Cross-Q. 207. If I understand your testimony in chief correctly, you went to work for the Drawbaugh Faucet Company, at Eberly's Mills, August 10th, 1868; worked there continuously until August 7th, 1869; were absent from August 7th, 1869, to October 11th, 1869; went to work again for the company October 11th, 1869, and worked continuously until February 4th, 1871, your employment there thus consisting of two periods, to wit: From August 10th, 1868, to August 7th,

1869; and from October 11th, 1869, to February 4th, 1871, and during the first period you boarded in the family of Daniel Drawbaugh from February 27th, 1869, to August 7th, 1869; is my understanding correct?

Ans. It is.

Cross-Q. 208. Were you ever in Mr. Drawbaugh's shop prior to your employment there, August 10th, 1868?

Ans. I do not remember.

Cross-Q. 209. When you first went to work there, August 10th, 1868, in what building were the operations of the company carried on?

Ans. In the building down at the creek, right where the dam is.

Cross-Q. 210. Do you mean the same building which Mr. Drawbaugh has since occupied as his shop—the building in which the Haucks carried on their business?

Ans I do.

Cross-Q. 211. Name all the workmen who were employed in that building from the 10th of August, 1868, to the 4th of February, 1871.

Ans. I do not remember the names of all the workmen.

Cross-Q. 212. Give all the names that you do remember.

Ans. Daniel Drawbaugh, John Drawbaugh, Hiram Drawbaugh, John Smith, Henry Snavely, Arthur Umberger, Charles Umberger, Luther Gorgas, Samuel Zimmerman. I think there was one by the name of Abner Cadow, and others. I cannot give their names. Richard Eckburn, John Schroeder also, that is all I remember.

Cross-Q. 213. Who among those workmen were your most intimate friends and companions at that time?

Ans. Daniel Drawbaugh, Hiram Drawbaugh, Charles Umberger, Henry Snavely, and John Drawbaugh. I mean the squire.

Cross-Q. 214. Had you any intimate companions in the town at that time who were not workmen there? If so, give their names.

Ans. I had none, no more than socially. I should have mentioned John Smith's name in my previous answer.

Cross-Q. 215. Mention the names of those with whom you were most intimate socially, and who were not workmen there.

Ans. I don't understand the question just right. Do you mean in the town or around the country, or do you mean Shiremanstown included?

Cross-Q. 216. I mean in and around Eberly's Mills.

Ans. David Ditlow, a man by the name of Good, who kept a store there, Alfred Ditlow, George Drawbaugh; that is all I remember.

Cross-Q. 217. Give the names of those persons at Shiremanstown and vicinity with whom you were most intimate from 1867 to 1872 or during any portion of that time.

Ans. S. L. Pretz, David Mohler, Jacob Langsdorf, Jacob Rupp, Henry Rupp, George Fair, Samuel Bates, Dr. Mosser, Jr., and Dr. Mosser, Sr., Luther Gorgas, and others.

Cross-Q. 218. Do you remember a man named E. B. Hoffman, who worked for the Drawbaugh Manufacturing Company in the summer of 1868, and who testifies, on page 503 of respondent's printed record, that he saw Daniel Drawbaugh at that time working on a machine which he called a talking-machine?

Ans. I do not.

Cross-Q. 219. If it were material in this case to prove that there was such a man as E. B. Hoffman there in Drawbaugh's shop at work at any time while you were there, it could not be proved by your testimony; could it?

Ans. It could not.

Cross-Q. 220. You were eighteen years old when you went to work there and twenty-one when you quit; were you not?

Ans. About those ages; yes, sir.

Cross-Q. 221. Did you learn your trade there or had you learned it before?

Ans. I learned it there.

Cross-Q. 222. In what part of the shop did the Drawbaugh Manufacturing Company conduct its manufacturing operations?

Ans. We worked on three floors and kept the patterns on the fourth.

Cross-Q. 223. Was the building a three story building?

Ans. There was a basement, two stories and a garret.

Cross-Q. 224. What part of the business was conducted in the basement?

Ans. They had a grindstone there and the induction pipes of the faucets were ground there before the thread was cut on them.

Cross-Q. 225. What part of the business was conducted in the first story—the story next above the basement?

Ans. It was the room where the turning and fitting of the faucets, pumps, mill-bushes, and repair work was done in.

Cross-Q. 226. What part of the business was conducted in the second story of the building?

Ans. Making the patterns, painting faucets, packing faucets, storing faucets, turning wood; and most of the wood-work was done here.

Cross-Q. 227. Did you do any work at pattern-making, wood-working, painting, packing or storing?

Ans. I painted, packed and stored.

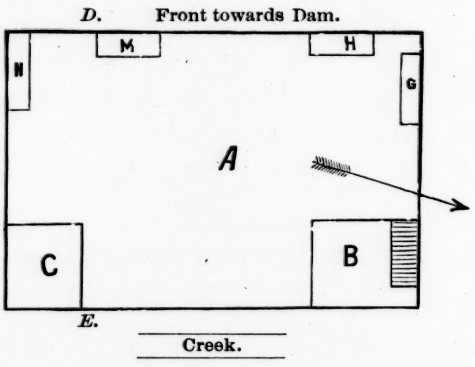
Cross-Q. 228. How many rooms was the second story divided into at that time?

Ans. Three.

Cross-Q. 229. Please make a sketch illustrating the division of that floor into three rooms as it was then.

Ans. I will.

(Witness makes the following sketch upon the record:)



Cross-Q. 230. Please describe the sketch, using reference letters.

Ans. A is the main room, B is the office, C is the storing-room for faucets, D is the front of the shop facing the dam, E is the back of the shop, F is the stairway coming up from the first story to the second story in the room B.

Cross-Q. 231. In which one of those rooms did you do the painting?

Ans. In the main room A.

Cross-Q. 232. In which one did you do the packing?

Ans. I packed in the main room A to send away, and packed in the room C for storage.

Cross-Q. 233. What was the room B used for?

Ans. For the general office of the shop. The books and drawings and other thing were kept in there.

Cross-Q. 234. In which room was the wood-working done?

Ans. The main room A.

Cross-Q. 235. Where were the patterns kept?

Ans. On the garret. The floor above this one.

Cross-Q. 236. Where were they designed and made?

Ans. I don't know where they were all made, nor designed.

Cross-Q. 237. What did Mr. Daniel Drawbaugh do about the business of the Drawbaugh Manufacturing Company?

Ans. He kept the time, part of the time, and got out the designs to do the work.

Cross-Q. 238. Where did he do his part of the business?

Ans. I don't understand the question.

Cross-Q. 239. What room did he occupy in doing that part of the business that he attended to?

Ans. He was all over the shop, and most of the time in main room A and room B.

Cross-Q. 240. In what story of the shop were you employed most of the time?

Ans. The first.

Cross-Q. 241. Did you do any work in the basement?

Ans. I did.

Cross-Q. 242. Did you see any electric clock there in the building while you worked there for the Drawbaugh Manufacturing Company?

Ans I don't remember.

Cross-Q. 243. Did you see any stamp-cancellers there while you worked there for said company?

Ans. I did.

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Ans. It could not.

Cross-Q. 245. Did you hear anything said while you worked there about Mr. Drawbaugh's having invented an electric clock?

Ans. I don't remember.

Cross-Q. 246. If it were material to prove in this case that his invention of an electric clock was a matter known and talked about in the community while you worked there, it could not be done by your testimony; could it?

Ans. It could not.

Cross-Q. 247. While you were boarding at Mr. Daniel Drawbaugh's

house, from February 27th, 1869, to August 7th, 1869, did he have any domestics employed in the family?

Ans. He had.

Cross-Q. 248. Who were they?

Ans. I think her name was Maggie Darr.

Cross-Q. 249. Was she employed there all the time that you boarded there?

Ans. No, sir.

Cross-Q. 250. During what part of that time was she employed there?

Ans. During the time that several of us boarded there.

Cross-Q. 251. Was that when you first went there to board, or towards the last of your boarding there?

Ans. The first part of my time.

Cross-Q. 252. She was employed in the family there when you first went there to board; was she?

Ans. It was some time between when I first went there and when the other boarders left.

Cross-Q. 253. Who boarded there besides yourself?

Ans. Charles Umberger. I don't remember the names of the others.

Cross-Q. 254. Were they workmen at the shop?

Ans. They were.

Cross-Q. 255. How many boarded there besides you and Charles Umberger?

Ans. I don't remember.

Cross-Q. 256. While you boarded there did you also room there?

Ans. I did.

Cross-Q. 257. Did you room alone or have a room-mate?

Ans. I was not alone.

Cross-Q. 258. Who roomed with you?

Ans. I don't remember.

Cross-Q. 259. Did any of the other boarders room there besides yourself?

Ans. They did.

Cross-Q. 260. Who of them roomed there?

Ans. All that boarded there.

Cross-Q. 261. How long did these boarders stay there?

Ans. I don't remember.

Cross-Q. 262. Your memory seems to be clearer about the hired girl than anybody else there; why is that?

and refer to page 503 of respondents' record, on which page Hoffman testified that he began work there in March or April, 1868, and continued to work there until the latter part of September of the same year. I now call your attention also to the deposition of William L. Gorgas, a witness called by respondents, and who, at their request, produced the accounts of the Drawbaugh Manufacturing Company. Mr. Gorgas' 48th cross-answer, at the top of page 686, respondents' record, shows from the books that Hoffman did not work there after May 6, 1868; I understand from your testimony that May 6, 1868, was some three months before you went there; is that the fact?

Ans. It is.

Q. Q. 353. In your 229th and following cross-answers you, by a sketch and words, give some description of the partitions in the second story of Mr. Drawbaugh's shop; please to look at that sketch and description, and tell me whether the division marked *C* was a working-room or a storage closet, and extended far enough to take in a window, and how it was fitted inside?

Ans. It was a storage closet; it did not extend far enough to take in a window. There were shelves around on the inside to lay faucets on for storage; there was no packing done in this room for to send faucets away.

Q. Q. 354. Was that room lighted in any way when the door was shut?

Ans. It was not.

Q. Q. 355. Did that room exist there at the time when you went to work for the Faucet company, or was it partitioned off afterwards; and if so, how long afterwards, if you remember?

Ans. It did not; it was partitioned off afterwards about a year.

Q. Q. 356. I wish you would now point out on your sketch, and add to it by drawing and letters, where the benches were situated and where the wood-turning lathe was, and where strainers were made.

(Witness adds to sketch.)

Ans. I do so; *g* and *h* were wood-working benches; *m* was the wood-lathe; *n* was the bench were they made strainers.

Q. Q. 357. Were both those benches *g* and *h* generally worked at, or which most, if you remember?

Ans. They were not; *h* was the general work bench; *g* was used mostly for scraps or odd pieces; they were thrown on here just to get them out of the road.

Re-cross by Mr. Hill:

Re-cross-Q. 358. In your sketch are the benches *g*, *h* and *m* shown in their relative proportions to the room and to each other—I mean in respect to their length?

Ans. They are used to designate the places where the benches were.

Re-cross Q. 359. State as near as you can remember the length of these several benches.

Ans. I do not remember, but they were not very long.

Re-cross-Q. 360. The shop Diagram No. 1, put in evidence in the deposition of Daniel Drawbaugh, respondents printed record, page 920, correctly represents the second floor of the shop as it was at the time when you went to work there in the summer of 1868; does it not?

Ans. It does, with the exception of D e, the chimney. I remember that it was there, but don't remember exactly where to put it.

Cross-Q. 361. Do you remember whether there was any room partitioned off from the main room on the first floor of the shop, while you worked there?

Ans. There was not.

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me, this 21st day of December, 1882.

FRED. M. OTT,
Examiner.

JACOB CARNS.

Adjourned until Wednesday, December 27th, 1882, at two o'clock, P. M.

WEDNESDAY, DECEMBER 27, 1882, 2, P. M.

Examination resumed, pursuant to adjournment.

Present, Mr. Storrow for complainants, and Mr. Hill for respondents.

JAMES M. SPEESE, *being produced, sworn, and examined, saith:*

Examined by Mr. Storrow.

Q. 1. State your age; residence, and occupation.

Ans. My age is thirty-five; residence, Newburg, Cumberland county, Pennsylvania; occupation, minister of the Gospel.

Q. 2. In year 1876 and thereabouts, did you know Mr. Samuel Bruce,

of Wormleysburg, and did you know Miss Annie Nichols, of Nicholas, of White Hill, a daughter of Mr. Samuel Nichols?

Ans. Yes, sir.

Q. 3. Please look at the marriage certificate now shown you, and state whether the signature of Rev. J. M. Speese thereto is your signature, and read the whole certificate as part of your answer?

Ans. It is my signature; I read it as follows:

"In the name of the Father, and of the Son, and of the Holy Ghost, "Amen. This is to certify that *Mr. Samuel Bruce*, of Wormleysburg, "and *Miss Annie Nicholas, of White Hill*, were by me united in the "bonds of marriage at *Wormleysburg*, according to the ordinance of "God and the laws of the State of *Pennsylvania*, on the *tenth* day of "*June*, A. D. 1876.

"Witness present: "*Rev. J. M. Speese.*

Mrs. J. M. Speese.

"What God hath joined together, let no man put asunder."

(The certificate is engraved and ornamented, and the parts written in the manuscript are here printed in italics.)

Q. 4. In whose handwriting is the manuscript part of this certificate, and in whose handwriting is the signature of Mrs. J. M. Speese, named as a witness present?

Ans. Both in the handwriting of Mrs. Speese, my wife; she filled out the certificate.

Q. 5. Did you perform the marriage ceremony for those two parties as set forth in that certificate?

Ans. I did.

Q. 6. Where were you living at that time, June 10th, 1876, and in whose house?

Ans. In Wormleysburg, and in the house of this same Samuel Bruce.

Q. 7. Did you live in the same house with him, or in another house; and if the latter, how near to the house in which he lived?

Ans. Not in the same house, but a separate one, perhaps twenty-five yards from his own—within that distance.

Q. 8. When did you move to Wormleysburg, and how long did you live there?

Ans. I moved there in the spring of 1875, and remained there two years.

Q. 9. How long after you went there did you move into this house belonging to Mr. Bruce, and how long did you stay in that house?

Ans. In the fall of the year; I don't remember the month; I remained until the next April one year.

Q. 10. Was Mr. Bruce one of your parishioners when you first went there, and had you previously known him?

Ans. If I remember right, he was; and I did know him previously.

Q. 11. Had he been married before he married Miss Nichols, and if so, did his first wife die a short time or a long time before you moved to Wormleysburg?

Ans. He was married before; his wife died a short time before I moved there.

Cross-examined by Mr. Hill:

Cross-Q. 12. What was his first wife's name?

Ans. I don't recall it.

Cross-Q. 13. Was the marriage certificate made out at the time of the marriage or subsequently, and if the latter, when?

Ans. If I remember right, subsequently, but the exact date I cannot give.

(*Certificate objected to by Mr. Hill, as incompetent and secondary.*)

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me this 27th day of December, 1882.

FRED. M. OTT,
Examiner.

J. M. SPEESE.

THADDEUS C. BLAIR, *being produced, sworn, and examined, saith:*

Examined by Mr. Sorrow:

Q. 1. State your age, residence, and occupation.

Ans. My age is thirty-nine; residence, Ashland, Baltimore county, Maryland, about fourteen miles north of Baltimore city; occupation, assistant manager of the Ashland Iron company; I have been in the employ of the company nineteen years, and have been assistant manager about fourteen.

Q. 2. Has paying the men been a part of your duty?

Ans. Yes, sir; I have paid the men for about seventeen years—all the bank men; I have paid the furnace men as long as I have been assistant manager; that is, about fourteen years.

Q. 3. Is the Pott Spring ore bank one of the ore banks worked by your company; and where is it?

Ans. It is; it is about five miles from Ashland.

Q. 4. Did a one-armed man named Urias R. Nichols, work for your company at that bank?

Ans. Yes, sir; U. R. Nichols, we generally knew him as.

Q. 5. What State did he come from?

Ans. I believe from Pennsylvania.

Q. 6. Will you please produce all the pay-rolls of your company which contain his name, and point out to the examiner where his name occurs and the entries relating to him, that the examiner may copy the notes or entries.

Ans. I produce them; they are the pay-rolls for Pot Spring ore bank for the following dates: 1871, August, September, October, November, December, 1871; 1872, every month in the year; 1873, January to October inclusive; but his name is not found in the pay-roll of October, 1873; I point out the entries. His name first appears as working August 23, 1871, and thence continuously every day of that month at $1 60 per day, which is at the rate of about $40 per month; he was employed as engineer, running the regular ore-bank engine.

Pay-roll for September, 1871, shows that he was working by the month, at $40 per month, and was paid for full time; he boarded at the company's boarding-house and his board bill of sixteen dollars also shows that he boarded full time.

Pay-roll of October, 1871, shows the same.

" " November, 1871, "

" " December, 1871, shows full month's pay of $40, board $11 66 for part of the month, and a charge of coal from the store shows that he had his family there. No rent is charged for that month. When a regular man moves in, we don't charge him for part of a month.

Pay-roll for January, 1872, shows full month paid.

Pay-roll for February, 1872, shows full month paid. House rent charged, $4 00.

Pay-roll for March, 1872, shows the same.

" April, 1872, "

" May, 1872, "

" June, 1872, "

" July, 1872, "

" August, 1872, "

" September, 1872, "

" October, 1872, "

Pay-roll for November, 1872, shows the same.

" December, 1872, "
" January, 1873, "
" February, 1873, "
" March, 1873, "
" April, 1873, "
" May, 1873, "
" June, 1873, "
" July, 1873, "
" August, 1873, "
" September, 1873, "

The pay-roll for October, 1873, does not bear his name as a man working. The foreman seems to have put his name on the list, but crossed it out afterwards, and he was paid nothing for that month. The reason that I know that he was there at those different times when I paid, is that, when a man was not there I paid the foreman and marked it on the rolls.

Q. 7. Opposite his name on these various rolls I find written the word "paid," always, I believe, in pencil; in whose handwriting is that word "paid" opposite the name of Mr. Nichols?

Ans. In my handwriting.

Q. 8. Where did he go to work, or what position did he have an appointment to, when he left you at the end of September, 1873?

Ans. I understood he was appointed as light-house-keeper.

(*This deposition objected to by Mr. Hill, as not in rebuttal and as immaterial and irrevelant, and cross-examination waived.*)

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me, this 27th day of December, 1882.

FRED. M. OTT,
Examiner.

THADDEUS C. BLAIR.

SAMUEL N. EMMINGER, *being produced, sworn, and examined, saith:*

Examined by Mr. Storrow:

Q. 1. State your age, residence, and occupation.

Ans. I am fifty-three years of age; my family lives in Mechanicsburg, Cumberland county, and I work in Carlisle; I am clerk to the county commissioners of Cumberland county.

Q. 2. How long have you been clerk to the commissioners of Cumberland county, and what previous positions and occupations of a public nature have you held before that?

Ans. I have been clerk to the county commissioners since January, 1879; I was deputy sheriff of the county from November, 1855, until about the first of July, 1857; I was elected register of the county in October, 1857, for a term of three years, from December 1, 1857; I was deputy sheriff from the 22d day of November, 1873, until the first of January, 1877; I was deputy register from March, 1878, to January, 1879.

Q. 3. Have you had occasion to become acquainted with the geography of Cumberland county, Pennsylvania, including the streams, mills, and bridges?

Ans. I have.

Q. 4. What public body has charge of the erection, maintainance, and repair of public bridges in Cumberland county?

Ans. The commissioners of Cumberland county are the custodians of all public property of the county, excepting the alms-house and insane asylum.

Q. 5. I asked you to make me a list of the different mills on the Yellow Breeches creek, beginning at its mouth, where it empties into the Susquehanna, and extending along the course of the Yellow Breeches as far as Lower Allen township extends, and up to the middle of Upper Allen, and also to indicate by a cross, in red ink, where these mills are, on Beer's Atlas of Cumberland county, printed in 1872. If you have done so, please produce the list, and send it as part of your answer.

Ans. I have done so; the list is as follows:

The mills on the Yellow Breeches creek, beginning at the mouths, are as follows: At New Cumberland, the Ross mill; a grist-mill in York county; another grist-mill on the Cumberland county side, known as the Baughman mill, at one time run by Zacharias & Co.; (the Yellow Breeches creek is the boundary between Cumberland and York counties.) A saw-mill of Mosser, Sadler & Co. in York county; a sash and door factory of Mosser, Shoop & Co. in New Cumberland; and the saw-mill of Eberly & Lee and Lee & Bayler, burned in 1881. These mills are about three miles below Milltown by road.

Next mill above is Etter & Shanklin's grist-mill, about a half a mile below Milltown.

Next mill is Hake's grist-mill, about two miles above Milltown by road. Next mill is Miller's, formerly Boyer's grist and saw-mill, about three or four miles above Milltown by road. This mill is in York county.

Next mill above is Zinn's clover and grist-mill.

Next is Zinn's fulling-mill.

Next above is Liberty forge, in Cumberland county.

Next is Kunkle's mill at Lisburn; next, Levi Lantz grist and saw-mill; next is Long's grist-mill in Cumberland county, (now burnt;) and Lauck's grist-mill in York county opposite; these are at Bowmansdale bridge. This is about six miles from Milltown by road.

Next is Levi Hertzler's grist-mill at Coover's bridge, nine or ten miles from Milltown by road.

Q. 6. I have also asked you to prepare a similar list of the bridges over the Yellow Breeches, included in the same territory, and to mark them with a mark in red ink across the creek, and to include in that list a statement as to whether those bridges or any of them have been built, re-built, or destroyed since 1860, referring for that purpose to the accounts and records of the county commissioners; if you have done so please produce that list and statement, and read it as part of your answer?

Ans. This is the statement that I have written out from the records of the county.

The bridges on the Yellow Breeches creek are as follows:

Beginning at the mouth, first the railroad bridge at the mouth; second, stone arch bridge at New Cumberland, more than forty years old; the last twenty years no repairs beyond ordinary repairs, except some masonry in 1870 and in 1879.

Next bridge above is foot bridge at the mill known as Etter and Shanklin mill, about half a mile below Milltown. The adjoining farm at one time was Studebaker's, afterwards Ditlow, and afterwards Abram Bowman's. There always has been a ford there known as Studebaker's ford. The foot bridge was carried away by the ice and high water in the spring of 1875. Not long afterwards a petition was filed in the court of Cumberland county for a wagon bridge at that place. The bridge was not built, and the foot bridge was re-built in the winter of 1877 and 1878, when the foot bridge at Liberty Forge, which was removed on account of the new wagon bridge, was carried to Etter and Shanklin's mill and put up. That bridge is still standing. There is no such mill as Ditlow's in the county, nor Ditler's mill.

The next bridge above, is at Hake's mill, which is about two miles above Milltown by road, and more by the course of the stream. This bridge

was built before 1860, and has never been carried away nor rebuilt. This bridge is named from Hake's mill. This bridge is whitewashed; never red.

Next bridge above this is a stone and brick arch bridge, at the mill generally known as Miller's mill, formerly Boyer's mill. This bridge was never red. It has never been carried away or had any considerable repair since 1860.

Next bridge is a foot bridge at Zinn mill, which is four miles by road, and twice as far by water, from Eberly's mills, by the course of the stream. There is no Ditlow farm or mill at this point.

Next above is the Liberty Forge bridge. There was formerly a foot bridge at this point. In the summer of 1877 the commissioners of Cumberland and York counties ordered a wagon bridge to be built there. The Cumberland county commissioners' records show that it was viewed and accepted in January, 1878. About the time it was ready for use the foot bridge was moved to Etter & Shanklin's mill.

The next bridge above, is the old Lisburn bridge at Kunkle's mill, is more than twenty years old, and has never been carried away during that time.

Next above is the Anderson bridge, built in 1873, and has not been carried away.

Next above is the Lantz bridge, built in 1867, never carried away since.

Next above is the Bryson bridge, stone arch, near Mr. W. M. Watts, about six miles by road from Milltown. Erected prior to 1860, and never carried away.

Next above that is the Bowman's Dale bridge, at Long's mill and Lauck's mill. Long's mill has been burned within two years. This is a Burr Arch bridge, covered and whitewashed, built in 1866. Never has been carried away. The foot bridge just above it went away not later than 1870, and has never been replaced.

Next above is Coover's bridge, at Levi Hertzler's mill. This is more than twenty years old, and has never been carried away. This bridge is nine or ten miles from Eberly's mills, by road, and twice as far by the course of the stream. All the before-mentioned bridges are on the Yellow Breeches creek.

Q. 7. Please produce, for inspection, the books and records of the county commissioners which you have referred to in preparing that statement?

Ans. I produce the day-books from 1858 to 1875, inclusive, in two volumes; also, the minute-book of the proceedings of the commissioners from 1874 up to the present date.

Q. 8. In your sixth answer you speak of a foot-bridge at Etter & Shanklin's mill, about half a mile below Milltown, adjoining the Ditlow farm. Was there any mill, except that Etter & Shanklin mill, in that neighborhood that was likely to be spoken of as the Ditlow mill, or Ditler mill?

Ans. None that I know of.

Q. 9. Could wagons cross at Etter & Shanklin's mill while the foot-bridge was there, and if so, how?

Ans. They could cross through the creek—drive right through on the fording; the foot-bridge was immediately below the fording.

Q. 10. You speak of a petition for a wagon-bridge at that place not long after the foot-bridge was carried away by ice and high water in the spring of 1875; do you remember whether that petition was started very soon after the foot-bridge was carried away, or whether it was started some years after that?

Ans. It was started soon afterwards.

Q. 11. I call your attention to a paragraph in the *Independent Journal*, for Wednesday, April 7, 1875, a newspaper published at Mechanicsburg, Cumberland county, which is as follows:

"Two new bridges have been asked for in this county, one on the Yellow Breeches, in Lower Allen township; the other on the Conedoguinet, in Hopewell township," and ask you whether that refers to the request for a new bridge, which you have already mentioned.

Ans. It does; it refers to the bridge at the mill at Etter & Shanklin, across the creek.

Q. 12. Was there a petition for a new bridge at Etter & Shanklin's mill filed in the county court; and if so, was it presented in the year that the foot-bridge was carried away, or in a subsequent year?

Ans. It was presented at the August sessions of the same year that the foot-bridge was washed away.

Q. 13. I show you and put in evidence a certified copy of a petition for a bridge over the Yellow Breeches: Is that the petition you refer to?

Ans. That is a certified copy of the original petition as presented to the court.

The petition is as follows:

To the Judges of the Court of Cumberland County, &c.:

The petition of the Subscribers Respectfully showeth: That a Bridge is much wanted over the Yellow Breeches Creek at the Fording formerly known as Studebaker's where the public road leading from Lewisberry to Harrisburg crosses said creek at Milltown in Cumberland county, the creek being the line of said counties; and that the erection of said bridge will require more expense than it is reasonable one or two adjoining townships should bear. They therefore pray the Court to appoint proper persons to view the premises in connection with the viewers of York county and they will ever pray etc.

S. M. Hertzler,
Geo. W. Mumper,
M. B. Mosser, M. D.
John Bitner,
Jacob S. Eshelman,
Jacob Sheely,
Peter E. Zimmerman,
John B. Eberly,
Henry M. Bitner,
J. E. Mumma,
D. Z. Miller,
Wm. Gingrich,
Jno. M. Underwood,
John Strong,
John Bigler,
William K. Seitz,
Christian Hess,
H. Neidig,
J. K. Taylor,
Wm. R. Gorgas,
F. J. Sheely,
Henry Zimmerman,
Isaac Zimmerman,
Christian Zimmerman,
Solomon Zimmerman,
Emanuel Zimmerman,
Henry W. Zimmerman,
Christian R. Zimmerman,
Jacob H. Reneker,
Levi Musselman,
Daniel L. Hart,
Geo. Leonard,
E. F. Gilbert,
Charles Oyster,
Simon K. Oyster,
Jacob Gower,
Etter & Shanklin,
C. B. Neisley.

August 23, 1875. I certify that the within petition is regular and in due form, and that the prayer thereof is lawful, and conforms to the prayer of the petitioners.

(*The above petition is endorsed as follows:*)

Petition for a bridge over the Yellow Breeches creek on the line of York and Cumberland counties, where the road from Lewisberry to Harrisburg in Cumberland county crosses said creek.

Filed 23 Aug. 1875.

Aug. 25, 1875 J. L. Boyer, Jacob Emminger, Simon Eberly appointed viewers by the court.

A. B. Sharpe,
Atty for Petitioners.

I certify the foregoing to be a true copy of the original, as full and entire as the same remains on file in the office of the clerk of the Court of Quarter Sessions, of Cumberland county, Pa.

Witness my hand and the seal of said court, at Carlisle, this 17th day of May, A. D. 1882.

[SEAL.] Samuel Bixler,
Deputy Clerk.

Q. 14. E. B. Hoffman, a witness called by the defense, testified on page 503 of respondent's printed record, and there mentioned a freshet which washed away "the red bridge at Heck's"; is there any bridge in Cumberland county known as "the red bridge, at Heck's," and if so, where is it?

Ans. There was a bridge at Heck's fording, over the Conedoguinet—an iron bridge painted red, that was washed away or carried away by the ice in February, 1881.

Q. 15. When was that bridge built? You may refer to the books of the commissioners.

Ans. The bridge was accepted on the 18th day of September, 1868.

Q. 16. I understand from the map that the Yellow Breeches forms the southern boundary of the county along by Lower and Upper Allen townships; and that the Conedoguinet runs through the northern part of the county; is that the fact?

Ans. That is the fact.

Q. 17. Was any part of that bridge broken down or carried away between the time when it was built in 1868 and the time when it was carried away in 1881; and if so, when and from what cause?

Ans. There was one span of it broken down—the eastern span—by a loaded wagon going over it; the county commissioners book has the following entry under the date of October 14, 1872, and under the heading "Roads and Bridges:" Paid Jacob Eslinger damages and costs at Heck's bridge, $382 47."

Q. 18. Was that bridge at Heck's ever carried away by ice from the time when it was completed, in 1868, to the time when it was carried away in 1881?

Ans. Never.

Q. 19. If you can point out any entry in the records of the commissioners early in 1881, relating to this Heck bridge, please do so?

Ans. Under date of February 21, 1881, the records signed by me contain a memorandum that two of the iron bridges over the Conedoguinet creek were swept off entirely. Under date of April 9, 1881, is the following, signed by me as clerk: "At a meeting of the Board of Commissioners the proposals for the sale of the Heck iron bridge as it lays upon the ground were opened," etc.

Under date of April 11, 1881: "At a full meeting of the Board of Commissioners, resolved, that the county rebuild the bridges which were destroyed by the ice floods in the early spring of 1881, known as the Heck bridge near Oyster's Point and the Watts bridge near Carlisle, both on the Conedoguinet Creek."

Q. 20. I call your attention to a paragraph in the *Independent Journal* of Wednesday, September 27th, 1876, a newspaper published at Mechanicsburg, Cumberland county, which I now show you. Said paragraph is as follows:

"The cider-mill of John Zacharias at Hecks Mills on the Yellow-breeches Creek is run day and night squeezing the juice out of apples. The amount of apples made into cider at this mill since the first of September is almost incalculable."

What mill is referred to in that paragraph?

[*The statements of the paragraph objected to by Mr. Hill, as hearsay, and as absurd on their face.*]

Ans. Hake's mill on the Yellow Breeches creek.

Q. 21. Did John Zacharias work there, and did he have a cider mill?

Ans. He lived there and worked there and had a cider mill in 1876.

Q. 22. Was he any relation to the members of the firm of Zacharias & Son who used to run a mill at New Cumberland; and if so, what?

Ans. He was a son of Samuel Zacharies, and a brother of Samuel N. Zacharies, who composed the firm of Zacharias & Son.

Q. 23. I understand from your sixth answer that the bridge over the Yellow Breeches at Hake's mill never was a red bridge since 1860, and never has been carried away since that time, is that the fact?

Ans. That is the fact.

Adjourned until December 28, 1882, at 10, A. M.

DECEMBER 28, 1882, 10, A. M.

Examination resumed, pursuant to adjournment.

Present, same counsel.

Examination of Samuel N. Emminger by Mr. Storrow, continued;

Q. 24. I asked you to look through the two day-books of the commissioners which you have produced, and examine every item relating to bridges contained in them, and also to look through the records during the period covered by them, and examine all the entries relating to the building, rebuilding, or repairing of bridges, in order to more accurately ascertain what the county did in that respect during the period referred to; did you do so?

Ans. I did, sir; I made a careful examination of every year from 1858 to 1875, inclusive.

Cross-examined by Mr. Hill:

Cross-Q. 25. Have you stated all that the county commissioners' records show in relation to the building, rebuilding, repairing, destroying, or damaging of bridges on the Yellow Breeches creek within three miles of Eberly's Mills, up and down the creek, from 1871 to 1876?

Ans. I have, sir; they are contained within those two volumes, every dollar of the expenditures, for the purposes referred to in the question, are contained in those two books; that is, county bridges.

Cross-Q. 26. What other bridges are there in Cumberland county besides county bridges?

Ans. There are township bridges across small streams or runs that the county has no connection with at all.

Cross-Q. 27. Your testimony above given does not embrace the township bridges; does it?

Ans. No, sir; it does not.

Cross-Q. 28. I suppose there are also some private bridges owned and used by private individuals, for their own accommodation, are there not?

Ans. It may be possible that there are; I don't know of any; there may be.

Cross-Q. 29. Have you any recollection of a sudden freshet in the neighborhood of the Yellow Breeches, in the latter part of the summer of 1873?

Ans. Not particularly; there are freshets in both the creeks almost every year.

Cross-Q. 30 Did you ever go fishing for fish and turtle in the Yellow Breeches creek?

Ans. I went fishing for fish on the Yellow Breeches creek a very great many times, but I never fished for turtles in my life.

Cross-Q. 31. Do you know what the turtle fishing season is there?

Ans. I couldn't answer that question intelligently; I know when they are brought in by the fishermen into the markets in town for sale.

Cross-Q. 32. In what season of the year are they mostly brought in to market by the fishermen?

Ans. From May to September.

Cross-Q. 33. At the time the foot bridge was carried away at Ditlow's mill last, before the petition was presented to the county court, which you have referred to, were you down there to the side of the bridge at any time after it was carried away, and before the petition was presented?

Ans. Yes, sir.

Cross-Q. 34. You were not there at the time that it was carried away, were you?

Ans. No, sir; I was not.

Cross-Q. 35. You don't know the time of the destruction of the bridge then, except by recollection of hearsay, do you?

Ans. I know that it was there; I saw in the early spring of 1875 that it was washed away, and knew that it was done that spring; I know that myself from being in the neighborhood, and crossing the stream there.

Cross-Q. 36. In the petition above referred to the petitioners state "that a bridge is much wanted," &c., would you understand that as meaning a foot bridge or a larger bridge for both carriage and foot travel?

Ans. A wagon bridge; the county does not build foot-bridges; they are built by the township or by citizens of the localities where they are erected.

Cross-Q. 37. Did the county or counties after the summer of 1875 build a wagon bridge at that place?

Ans. They did not.

Cross-Q. 38. Have you any recollection of crossing or being at the Yellow Breeches at that point in the latter part of the summer or the fall of 1873?

Ans. I have no particular recollection of being there at that time.

Cross-Q. 39. In 1873 were there not a number of people living along

in the neighborhood of the Yellow Breeches from its mouth, say eight miles up, of the name of Hake or Heck?

Ans. In 1873 there was one family of Heck's living at Milltown—George W. Hecks' family, and Hakes, living in York county, close to what is called Hakes' mill now; George W. Heck died in July of 1873.

Cross-Q. 40. There is a little stream emptying into the Yellow Breeches at Milltown; is there not?

Ans. Yes, sir.

Cross-Q. 41. Will you give the name of that stream?

Ans. Cedar Run I believe is what it is called.

Cross-Q. 42. That stream, Cedar run, furnishes the power to run both the grist-mill at Milltown, and the shop of Daniel Drawbaugh lower down on the run, does it not?

Ans. Yes, sir.

Cross-Q. 43. Mr. Drawbaugh's shop is within a few yards of the mouth of Cedar run, where it runs into the Yellow Breeches; is it not?

Ans. It is a very short distance; I don't know exactly how many yards.

Cross-Q. 44. The shop of Mr. Drawbaugh is off by itself some little distance from the grist-mill; is it not?

Ans. Yes, sir.

Cross-Q. 45. And owing to a hill it is nearly out of sight from the grist-mill, is it not?

Ans Yes, sir; very nearly so.

Cross-Q. 46. The road from the grist-mill down to Drawbaugh's shop crosses the Cedar run near the grist-mill, and then proceeds along the left bank of the run along the foot of the hill or bluff on that side; does it not?

Ans. Yes, sir.

Cross-Q 47. The store, post-office, and blacksmith's shop are a little further from Drawbaugh's shop than the grist mill is, are they not?

Ans. They are; yes, sir.

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me, this 28th day of December, 1882.

FRED. M. OTT,
Examiner.

S. N. EMMINGER.

Adjourned until 2. 30, P. M.

DECEMBER 28, 1882, 2.30, P. M.

Examination resumed, pursuant to adjournment.

Present, Mr. Smith and Mr. Storrow for complainants and Mr. Hill for respondents.

BENJAMIN KAUFFMAN, *being produced, sworn, and examined, saith:*

Examined by Mr. Smith:

Q. 1 State your age, residence, and occupation.

Ans. My age is sixty-eight. Residence, McLean county, Illinois. Occupation, farming.

Q. 2. How long have you lived at your present residence?

Ans. It is now pretty near five years. Till February, it will be five years.

Q. 3. You went there, then, in February, 1878?

Ans. Yes, sir.

Q. 4. Where did you reside before that?

Ans. In Lower Allen township, Cumberland county.

Q. 5. How near to Milltown or Eberly's Mills did you live, and in which direction from it?

Ans. West from Milltown, and about a quarter of a mile from it.

Q. 6. How long had you lived there before you moved to Illinois?

Ans. About twenty-five years.

Q. 7. Had you ever lived directly in Milltown before that?

Ans. Oh, yes.

Q. 8. At your residence about a quarter of a mile from Milltown were you near the school-house where the children of Milltown went to school?

Ans. Maybe it was fifteen or twenty yards from the school-house—not more than twenty yards.

Q. 9. What was your business while you lived in Milltown and near the school-house?

Ans. I worked around among the neighbors at day's labor.

Q. 10. Did you know Daniel Drawbaugh while you lived in those two places?

Ans. I know him about thirty or thirty-five years.

Q. 11. Did you work for people right in and around Milltown; if so, what kind of work did you do for them?

Ans. I worked at butchering, making the roads, and was quarrying stones in Milltown, too, already.

Q. 12. Did you ever do any work for Daniel Drawbaugh; and if so, how often and what kind of work did you do for him?

Ans. I was butchering, still, for him pretty near every winter for a good while.

Q. 13. What animals did you butcher for him, and how many each year?

Ans. Hogs; about two each year; sometimes he had three.

Q. 14. Did you know about the Drawbaugh Manufacturing Company, and the work that it carried on in making faucets and other things?

Ans. Yes; I seen them making the faucets.

Q. 15. State whether or not you were accustomed to go to that shop, more or less frequently, from the time the Drawbaugh Company commenced working there until you moved away to Illinois.

Ans. I was in middling often.

Q. 16. How came you to go there?

Ans. I went in to see Dan, still.

Q. 17. Were you accustomed to meet him frequently in the village, at the store, and other places outside of his shop?

Ans. I often seen him at the store and around in Milltown.

Q. 18. Did you know about the faucet business being carried on by another company or by a Mr. Hauck after the Drawbaugh Manufacturing Company wound up business?

Ans. No, I can't remember that.

Q. 19. Did you know of a company carrying on the axle business there, and if so, who were the persons interested in it?

Ans. I know of one—Kline.

Q. 20. Did Mr. Drawbaugh ever talk with you about things that he was making?

Ans. He told me about his clocks that he made.

Q. 21. Do you recollect what kind of clocks they were—how they ran?

Ans. I can't remember that.

Q. 22. State whether or not he ever told you anything about talking machines or showed you any machines of that kind.

Ans. He never did; he didn't talk to me nor didn't show me none.

Q. 23. When did you first hear anything about talking machines and how did you come to hear of it?

Ans. It was about a year after I was out in Illinois; Jonathan Fry came out from Pennsylvania and told me.

Q. 24. How did he come to tell you, and what did he say about it?

[*Objected to by Mr. Hill as not in rebuttal, and statements of Fry objected to as hearsay, and because no proper ground has been laid for introducing them.*]

Ans. I asked him about the neighbors around, and he told me Dan was making talking machines.

Q. 25. Please look at the various instruments now on the table, and state whether or not you ever saw them, or instruments like them, at Daniel Drawbaugh's shop when you were there.

Ans. I never seen any that I know.

(The instruments on the table are "A, "B," "C," "D,' "E," "F," "G," "I," "L," "L" reproduced, "M," "K," "N," "Q.")

Cross-examined by Mr. Hill:

Cross-Q. 26. You moved away from Milltown in February, 1878, did you?

Ans. Yes, sir.

Cross-Q. 27. How do you fix the time; do you rely on your memory alone?

Ans. Yes, sir.

Cross-Q. 28. Where did you live during the two years last before you moved to Illinois?

Ans. A quarter of a mile from Milltown.

Cross-Q. 29. What were you doing during those last two years before you moved away?

Ans. Working around among the neighbors at day's labor.

Cross-Q. 30. How often were you in Daniel Drawbaugh's shop during the last two years before you moved away?

Ans. I can't remember how often.

Cross-Q. 31. Are you sure that you didn't see a talking machine in his shop, at any time during the last two years, before you moved away?

Ans. I never seen any or heard talking about them.

Cross-Q. 32. But you don't know but that talking machines were there, do you?

Ans. I don't know anything about it.

Cross-Q. 33. Did you ever see or hear of anything there called a telephone, before you went west?

Ans. I never did.

Cross-Q. 34. Were you in Daniel Drawbaugh's shop as often during

Q. 12. Did you ever do any work for Daniel Drawbaugh; and if so, how often and what kind of work did you do for him?

Ans. I was butchering, still, for him pretty near every winter for a good while.

Q. 13. What animals did you butcher for him, and how many each year?

Ans. Hogs; about two each year; sometimes he had three.

Q. 14. Did you know about the Drawbaugh Manufacturing Company, and the work that it carried on in making faucets and other things?

Ans. Yes; I seen them making the faucets.

Q. 15. State whether or not you were accustomed to go to that shop, more or less frequently, from the time the Drawbaugh Company commenced working there until you moved away to Illinois.

Ans. I was in middling often.

Q. 16. How came you to go there?

Ans. I went in to see Dan, still.

Q. 17. Were you accustomed to meet him frequently in the village, at the store, and other places outside of his shop?

Ans. I often seen him at the store and around in Milltown.

Q. 18. Did you know about the faucet business being carried on by another company or by a Mr. Hauck after the Drawbaugh Manufacturing Company wound up business?

Ans. No, I can't remember that.

Q. 19. Did you know of a company carrying on the axle business there, and if so, who were the persons interested in it?

Ans. I know of one—Kline.

Q. 20. Did Mr. Drawbaugh ever talk with you about things that he was making?

Ans. He told me about his clocks that he made.

Q. 21. Do you recollect what kind of clocks they were—how they ran?

Ans. I can't remember that.

Q. 22. State whether or not he ever told you anything about talking machines or showed you any machines of that kind.

Ans. He never did; he didn't talk to me nor didn't show me none.

Q. 23. When did you first hear anything about talking machines and how did you come to hear of it?

Ans. It was about a year after I was out in Illinois; Jonathan Fry came out from Pennsylvania and told me.

Q. 24. How did he come to tell you, and what did he say about it?

[*Objected to by Mr. Hill as not in rebuttal, and statements of Fry objected to as hearsay, and because no proper ground has been laid for introducing them.*]

Ans. I asked him about the neighbors around, and he told me Dan was making talking machines.

Q. 25. Please look at the various instruments now on the table, and state whether or not you ever saw them, or instruments like them, at Daniel Drawbaugh's shop when you were there.

Ans. I never seen any that I know.

(The instruments on the table are "A, "B," "C," "D,' "E," "F," "G," "I," "L," "L" reproduced, "M," "K," "N," "Q.")

Cross-examined by Mr. Hill:

Cross-Q. 26. You moved away from Milltown in February, 1878, did you?

Ans. Yes, sir.

Cross-Q. 27. How do you fix the time; do you rely on your memory alone?

Ans. Yes, sir.

Cross-Q. 28. Where did you live during the two years last before you moved to Illinois?

Ans. A quarter of a mile from Milltown.

Cross-Q. 29. What were you doing during those last two years before you moved away?

Ans. Working around among the neighbors at day's labor.

Cross-Q. 30. How often were you in Daniel Drawbaugh's shop during the last two years before you moved away?

Ans. I can't remember how often.

Cross-Q. 31. Are you sure that you didn't see a talking machine in his shop, at any time during the last two years, before you moved away?

Ans. I never seen any or heard talking about them.

Cross-Q. 32. But you don't know but that talking machines were there, do you?

Ans. I don't know anything about it.

Cross-Q. 33. Did you ever see or hear of anything there called a telephone, before you went west?

Ans. I never did.

Cross-Q. 34. Were you in Daniel Drawbaugh's shop as often during

the last two years that you lived there as you were during any other two years since 1866?

Ans. I was oftener the couple of last years in his shop than I was before.

Cross-Q. 35. Mr. Rufus E. Shapley and Mr. Isaac D. Landis, two witnesses called on behalf of complainants, have testified on pages 589, 590, 591, 608, 609, 610, complainants' printed record, that Daniel Drawbaugh showed them at his shop, the 3d day of October, 1876, an instrument which he called a telephone, and which they think was "Exhibit B;" if they are correct, then it would appear that for some reason or other Mr. Drawbaugh did not show you the telephones which he had there; would it not?

Ans. He didn't show me anything or tell me anything.

Cross-Q. 36. Do you know anything about electricity?

Ans. He showed me a clock that was fixed that way—that it went by electricity.

Cross-Q. 37. When did he first show you that?

Ans. The fall before I went out to Illinois.

Cross-Q. 38. You mean the fall of 1877, do you?

Ans. Yes.

Cross-Q. 39. You never saw an electric clock there before the fall of 1877, did you.

Ans. I don't remember.

Cross-Q. 40. If you had seen one, would you remember the fact?

Ans. Oh, I guess I would remember.

Cross-Q. 41. Did you ever see anything else in his shop that was to be used in connection with electricity or magnetism?

Ans. A shocking-machine was there.

Cross-Q. 42. Did you ever see anything there, besides the shocking-machine and electric clock, that was to be used in connection with electricity or magnetism?

Ans. I did not.

Cross-Q. 43. Was the electric clock which he showed you a large handsome clock?

Ans. Not so very. It wasn't a handsome clock.

Cross-Q. 44. Was it fastened up against the wall, or standing in a case?

Ans. It was up against the wall.

Cross-Q. 45. You couldn't very well go in there without seeing it, could you?

Ans. I could see it if I went in the shop where it was—the room.

Cross-Q. 46. Of course you could see it if you went were it was; but I meant that you couldn't very well go into the room where it was without seeing it, could you?

Ans. I guess I can.

Cross-Q. 47. How large was it?

Ans. It was only a small clock.

Cross-Q. 48. That doesn't give its size; please state your recollection of its dimensions?

Ans. It wasn't over may be a foot long.

Cross-Q. 49. Was that the largest clock that you ever saw there in his shop?

Ans. No; they had a good deal larger clocks than that one.

Cross-Q. 50. What kind of clocks were they?

Ans. They wasn't finished yet altogether.

Cross-Q. 51. How many did you see there?

Ans. He was working at three; but none was finished when I left.

Cross-Q. 52. Had he never finished any before you left, so far as you know?

Ans. Not if I know.

Cross-Q. 53. Do you know anything else about electricity except what you learned from seeing those clocks?

Ans. I can't remember of none.

Cross-Q. 54. Did you ever take a shock with his shocking-machine?

Ans. I did.

Cross-Q. 55. You stated that Daniel Drawbaugh had two or three hogs butchered per year; it was cheaper to get pork in that way than it was to buy it at the market or the store, was it not?

Ans. There was not much difference, if a man has to buy the feed.

Cross-Q. 56. Do the market men and the store-keepers up in that vicinity sell pork for the fun of it, or to make a profit on it?

Ans. I can't tell; some says they don't make anything; I don't know how it is.

Cross-Q. 57. Whose house did you live in when you lived a quarter of a mile from Eberly's Mills?

Ans. Gorgas'.

Cross-Q. 58. William R. Gorgas?

Ans. Yes; William R. Gorgas.

Cross-Q. 59. Where was Drawbaugh's butchering done?

Ans. At Milltown.

Cross-Q. 60. Where in Milltown?

Ans. Where he lived; in different houses where he lived, still.

Cross-Q. 61. You did it at his house, then, and not at his shop, did you?

Ans. Yes; it was at his house.

Cross-Q. 62. At what season of the year did you do the butchering for him?

Ans. About Christmas time.

Cross-Q. 63. Did you butcher for him every year, for five or six years, before you left for the west?

Ans. Not every year.

Cross-Q. 64. Did you butcher for him about Christmas, 1876?

Ans. I can't remember that.

Cross-Q. 65. Name all the machines that you ever saw at Drawbaugh's shop.

Ans. I can't do that.

Cross-Q. 66. Why can't you?

Ans. I guess I didn't see them all.

Cross-Q. 67. Name all that you remember that you did see.

Ans. I seen a nail-machine to make nails; that is all that I know of his machines.

Cross-Q. 68. When did you first see the nail machine?

Ans. I can't remember; it must have been about eight or nine years.

Examination taken, reduced to writing, and by the witness subscribed to by touching the pen, as he did not know how to write, before me, the 28th day of December, 1882.

FRED. M. OTT,
Examiner.

His
BENJAMIN X KAUFFMAN.
mark.

Adjourned until December 29, 1882, at 10, A. M.

DECEMBER 29, 1882, 10, A. M.

Examination postponed until 2.30, P. M.

DECEMBER 29, 1882, 2.30, P. M.

Examination resumed, pursuant to adjournment.

Present, Mr. Smith for complainants, and Mr. Hill for respondents.

EDMAN F. HARRO, *being produced, sworn, and examined, saith*:

Examined by Mr. Smith:

Q. 1. State your age, residence, and occupation.

Ans. My age is thirty-one years; residence, Fairview township, York county, Pennsylvania; occupation, farming.

Q. 2. Did you ever reside at Milltown or Eberly's Mills; if so, state when you went there to live, and how long you remained there?

Ans. Yes, sir; I went there the 1st of March, 1875, and remained there two years.

Q. 3. In whose employment were you, if any one's, and what did you do while there?

Ans. Samuel Hertzler's; working on a farm.

Q. 4. State whether or not you lived in his family while there.

Ans. Yes, sir; I was right in his family the whole time.

Q. 5. How far was his house from the store and post-office in Milltown?

Ans. I might say a quarter of a mile.

Q. 6. Did you know Daniel Drawbaugh before you went to Milltown to live?

Ans. No, sir; I didn't.

Q. 7. Did you become acquainted with him and his family when you went there to live; if so, state how soon after you went there you became acquainted with him and his family?

Ans. Some two or three months after I went there.

Q. 8. State whether or not you were accustomed to visit Mr. Drawbaugh's house and to go to his shop, and if so, how frequently.

Ans. I have been quite a number of times at the house visiting, and a few times at the shop.

Q. 9. Did you know of his moving his family to Mechanicsburg while you were there, and if so, state whether or not you visited the family there, and how frequently?

Ans. I knew of his moving his family to Mechanicsburg; I visited the family a number of times at Mechanicsburg.

Q. 10. State whether or not the house at Milltown, and also the house at Mechanicsburg were well furnished or not, as compared with the houses of the people which you were accustomed to see.

[*Objected to by Mr. Hill as incompetent and immaterial, and because there is no evidence as to how the houses, which the witness was accustomed to see, were furnished; also, as calling for mere opinion.*]

Ans. Their houses were about as well furnished as they generally run there.

Q. 11. State if you remember whether the rooms were carpeted.

Ans. The rooms were carpeted so far as I was through the house.

Q. 12. Was there any musical instrument in the house; and if so, what was it and who used it?

Ans. There was an organ; the daughter was the only one I ever saw playing.

Q. 13. What was the appearance of the members of the family as to their dress?

Ans. About the same as was general at that place.

Q. 14. State whether or not there was anything in the appearance of the house or of the members of the family, or their style of living, which indicated extreme poverty or destitution.

Ans. No, sir; nothing.

Q. 15. Did you see Mr. Drawbaugh's goods when they were loaded up and started off from Milltown to Mechanicsburg; if so, state what you remember about the number of teams that were required to transport their goods?

Ans. I saw the goods when they were loaded and about starting; I am unable to state the exact number of teams that were required.

Q. 16. Do you remember any of the persons to whom the teams belonged, or some of them, and whether they were two or four horse teams; if so, give the particulars as well as you remember them?

Ans. As far as I remember them there were three big teams and one carriage; Mr. Rennard four horses, Sadler four horses; as to the other one I can't be positive.

Q. 17. Do you mean that you are not positive as to whom it belonged to, or as to the number of horses, or both?

Ans. Both.

Q. 18. While you were visiting in the family did you hear anything

said about an electric clock which Mr. Drawbaugh was getting up; if so, state what you remember to have been said about it, and how often it was spoken of, and by whom in the family?

Ans. I remember of the clock; I cannot say how often it had been spoken of, or in particular who had been speaking of it—different ones in the family.

Q. 19. You say you remember the clock; do you mean that you saw the clock?

Ans. Yes, sir; I saw the clock.

Q. 20. Where did you see it, and who, if any one, showed it to you?

Ans. I saw it in his shop, and Mr. Drawbaugh showed it to me.

Q. 21. Do you remember whether he explained it to you, and if so, whether or not it was connected with the ground in any way?

Ans. He explained it to me and it was said to be connected to the ground by a wire.

Q. 22. Do you remember whether you saw more than one such clock either finished or unfinished?

Ans. No, sir.

Q. 23. Do you remember whether or not you heard this clock spoken of among the people of the village at the store or other places?

Ans. Yes, sir, I did.

Q. 24. Do you remember hearing it spoken of in Mr. Hertzler's family, and of any talk between him and Mr. Drawbaugh about the clock?

Ans. Yes, sir; I heard them talking about it in Hertzler's family, and there was talk between Hertzler and Drawbaugh about the clock.

Q. 25. What was the talk between Hertzler and Drawbaugh?

Ans. That is more than I can tell—to tell what all had been spoken about it?

Q. 26. Do you remember whether there was anything said between Mr. Hertzler and Mr. Drawbaugh, or by Mr. Hertzler, about getting one of the clocks into his house?

[*Objected to by Mr. Hill, as not rebutting, and as incompetent, hearsay, and immaterial.*]

Ans. He had been speaking of it at one time.

Q. 27. Do you mean Mr. Hertzler or Mr. Drawbaugh, or both?

[*Same objection.*]

Ans. Mr. Hertzler.

Q. 28. Did Mr. Drawbaugh ever talk with you about an instrument

for telegraphing without a battery, or for giving signals by ringing bells; if so, what did he say about it?

[*Objected to by Mr. Hill, as immaterial and irrelevant.*]

Ans. He had talked to me about it, but as to what he said I am unable to say.

Q. 29. Do you remember whether he showed you the instrument?

Ans. Yes, sir.

Q. 30. Can you give any description of the instrument or the way in which it was to be used?

Ans. No, sir; not in particular.

Q. 31. So far as you remember anything about it, will you state what it was?

Ans. I can't mention what it was in any way at this time.

Q. 32. How much were you accustomed to go to Mr. Drawbaugh's shop, and for what reasons did you go when you did go?

Ans. I was only there a few times and had no particular business when I went.

Q. 33. And did you ever hear anything said by Mr. Drawbaugh or any of his family about talking machines, or did you ever see at his shop any instruments which were described to you as talking machines?

Ans. No, sir; I never did.

Q. 34. Did you ever hear anything said about such machines among the people of the village or in Mr. Hertzler's family?

Ans. No, sir; I didn't, not while I was there.

Q. 35. If you had heard anything said about such instruments, or they had been shown to you and described, do you think you would have been as likely to remember the fact as you have been to remember about the clock and the telegraph instrument?

[*Objected to by Mr. Hill, as incompetent, leading, and calling for mere opinion.*]

Ans. Yes, sir.

Q. 36. Will you look at the several instruments which have been placed on the table, and state whether you ever saw those instruments at Mr. Drawbaugh's shop, or instruments like them?

Ans. I don't think I ever saw any of them anywhere.

(The instruments on the table are "A," "B," "C," "D," "E," "F," "G," "I," "L," "M," "N," "O," "Q.")

Q. 37. When you left Mr. Hertzler's in the spring of 1877, where

did you go to reside, and where have you resided during all the time since then?

Ans. At Fairview township, York county.

Q. 38. How far is that from Milltown?

Ans. About five miles to where I live now; it was about three miles as near as I can tell, to where I lived before.

Q. 39. After you left Mr. Hertzler's did you continue to visit Mr. Drawbaugh's family, or have you been at his shop, or met him to talk with him?

Ans. No, sir; it was neither at the house nor shop. I have talked with him.

Cross-examined by Mr. Hill.

Cross-Q. 40. When you left Mr. Hertzler's where did you go to live?

Ans. Fairview township, York county.

Cross-Q. 41. I mean with whom did you live or for whom did you work?

Ans. I lived by myself and worked for myself.

Cross-Q. 42. Did you buy or rent a farm; if so, what farm?

Ans. I rented a farm belonging to Jacob K. Shell.

Cross-Q. 43. How long did you rent that farm?

Ans. I was there four years.

Cross-Q. 44. I understand you that the house on that farm is about three miles from Milltown; am I right?

Ans. As far as I know; it may be a little more.

Cross-Q. 45. Did you rent that farm from April 1, 1877, to April 1, 1881?

Ans. No, sir.

Cross-Q. 46. Did you live on it from April 1, 1877, to April 1, 1881?

Ans. Yes, sir; I lived on the farm.

Cross-Q. 47. When you moved away from it what farm did you go on to?

Ans. My father's, in the same township.

Cross-Q. 48. Have you lived on your father's farm ever since?

Ans. There was a little mistake that I made; when I moved away from Jacob Shell's farm I lived a couple of months in a house of John Bitner's, close to Hake's mill; I have lived on my father's farm ever since that.

Cross-Q. 49. Did you live at Samuel Hertzler's from March 1, 1875, to about April 1, 1877

Ans. Till about March 1, 1877.

Cross-Q. 50. What were you doing in the month from March 1 to April 1, 1877. and where were you?

Ans. I was at different places. I wasn't doing anything in particular.

Cross-Q. 51. Where did you live last, before going to Samuel Hertzler's to work?

Ans. At the Lisburn woolen factory.

Cross-Q. 52. Were you working in that factory, and if so, how long?

Ans. I was working there about ten months.

Cross-Q. 53. For whom?

Ans. Mills & Harro; John H. Mills and Harvey F Harro.

Cross-Q. 54. What were you doing before you went to the woolen factory?

Ans. Working on the farm.

Cross-Q. 55. For whom?

Ans. Working day's work for different ones. I had my home with my father.

Cross-Q. 56. While you were at Samuel Hertzlers's, were you employed as a laborer on his farm?

Ans. Yes, sir.

Cross-Q. 57. What wages did he pay you?

Ans. One hundred and sixty dollars a year.

Cross-Q. 58. Do you, or did you ever own a farm or a house?

Ans. No, sir; I didn't or don't own a farm or a house.

Cross-Q. 59. How came you to go to Drawbaugh's house, the first time that you ever went there?

Ans. The first time I was there I can't mind what I went for.

Cross-Q. 60. How long was that first visit to his house before he moved to Mechanicsburg?

Ans. Sometime in the spring of 1875.

Cross-Q. 61. How do you know that it was in the spring of 1875?

Ans. It is not hard to remember.

Cross-Q. 62. Was it in the day time or evening?

Ans. Day time.

Cross-Q. 63. On Sunday or week day?

Ans. Week day.

Cross-Q. 64. How long were you there on that visit?

Ans. I don't remember exact.

Cross-Q. 65. Who was there besides Drawbaugh's family and yourself?

Ans. I can't remember exact who.

Cross-Q. 66. Was Daniel Drawbaugh there?

Ans. I think not.

Cross-Q. 67. Which were you first at, his house or his shop?

Ans. House.

Cross-Q. 68. When were you first at his shop?

Ans. I don't mind exactly what time it was.

Cross-Q. 69. How many times were you at his shop during the last six months that you worked at Hertzler's?

Ans. I can't remember of being there more than once in the last six months.

Cross-Q. 70. How happened you to be there that once?

Ans. There was nothing that took me there particular.

Cross-Q. 71. What part of the shop were you in at that time?

Ans. The lower part.

Cross-Q. 72. What was going on in the lower part of the shop at that time?

Ans. There wasn't anything in particular.

Cross-Q. 73. Whom did you see there at that time?

Ans. Some of the Milltown boys.

Cross-Q. 74. What business did you ever see carried on in that shop at any time when you were there?

Ans. I never seen just so much business of any kind.

Cross-Q. 75. Can you mention anything that you ever saw going on there?

Ans. No, sir; not in particular.

Cross-Q. 76. Do you know of any business that was carried on there while you lived at Hertzler's?

Ans. The main business was making buggy axles at that time.

Cross-Q. 77. How do you know?

Ans. I heard a great deal of talk about it; I know that.

Cross-Q. 78. You never saw that business carried on there; did you?

Ans. I never just saw them making them; but I seen where they made them, and after they were made I saw them.

Cross-Q. 79. Were your visits to that shop in the day time or evening?

Ans. Evening, all but once.

Cross-Q. 80. Was that time the last time or the first?

Ans. The last.

Cross-Q. 81. Did you ever see Daniel Drawbaugh there in the evening?

Ans. Yes, sir.

Cross-Q. 82. How many times?

Ans. I don't know.

Cross-Q. 83. What was he doing?

Ans. He never was working anything particular in the evening when I saw him.

Cross-Q. 84. When he showed you the electric clock was it in day time or evening?

Ans. In the evening that he was talking about it.

Cross-Q. 85. Did he show you the telegraphing machine at the same time he showed you the clock?

Ans. Yes, sir.

Cross-Q. 86. Did he ever show them to you more than once?

Ans. I had been looking at them a couple of different times and talking about them.

Cross-Q. 87. Who was present during those two times?

Ans. There was several in the shop but I can't name just any of them in particular.

Cross-Q. 88. Was anything shown or talked about then except the clock and the telegraphing machine?

Ans. Nothing in particular.

Cross-Q. 89. Can you give me any idea of the date of those two visits when you saw the clock and the telegraphing machine?

Ans. I didn't say that I saw them only twice. I can't give the date.

Cross-Q. 90. Was it during the first year that you lived at Hertzler's, or the last year?

Ans. I think it was in the fall and winter of the first year.

Cross-Q. 91. Did you ever see Daniel Drawbaugh there at the shop in the evening, during the last year that you lived there?

Ans. I think I did.

Cross-Q. 92. He was living at Mechanicsburg during the last year, was he not?

Ans. Yes; But he stayed down mostly all the week. He went home about twice a week. Of course there was times when he went off during the week.

Cross-Q. 93. Where did he stay at Milltown while his family lived at Mechanicsburg?

Ans. He stayed part of the time with his brother.

Cross-Q. 94. In what part of the shop did you see the electric clock and telegraph machine?

Ans. Upstairs.

Cross-Q. 95. How many rooms were there on the floor upstairs?

Ans. There was one big one, and I think there was two small ones.

Cross-Q. 96. How many of those rooms were you ever in?

Ans. Two, that I am sure of.

Cross-Q. 97. Which two were they?

Ans. The big room and the one small one that I mentioned.

Cross-Q. 98. Were the electric clock and the telegraph machine in the small one or the large one?

Ans. In the small one, at that time.

Cross-Q. 99. Did the stairs come up into that small room from below?

Ans. The stairs came up outside.

Cross-Q. 100. Was there a passage-way leading from the head of the stairs into the large room and between the two small rooms?

Ans. Yes, sir.

Cross-Q. 101. Which of the two small rooms were you in—the one on the left of that passage-way or the one on the right, as you went in?

Ans. On the right.

Cross-Q. 102. What did you see in that room besides the clock and telegraph?

Ans. I seen different things in there; I can't name any in particular.

Cross-Q. 103. When did you first hear that Daniel Drawbaugh had invented a talking-machine or telephone?

Ans. I can't mind exactly when first I heard of it—what date, at any rate.

Cross-Q. 104. Fix the time, as near as you can, and tell us how you heard of it and who told you.

Cross-Q. 105. I don't think that I heard anything about it until some time last summer; as for who told me I can't say.

Adjourned until December 30, 1882, at 9.30, A. M.

DECEMBER 30, 1882, 9.30, A. M.

Examination resumed, pursuant to adjournment.

Present, Mr. Smith and Mr. Storrow for complainants and Mr. Hill for respondents.

Cross-examination of Edman F. Harro, by Mr. Hill, continued:

Cross-Q. 106. When you visited Mr. Drawbaugh's family while you lived at Hertzler's how many persons did his family consist of, and what were their names?

Ans. I think there was five children; I can't be positive about it; I am unable to name them all just at this time.

Cross-Q. 107. Name all that you can.

Ans. Laura V. Drawbaugh, Harry Drawbaugh, Bella Drawbaugh, Charley Drawbaugh; that is all I can name.

Cross-Q. 108. How old were these several children at that time, to the best of your judgment and recollection?

Ans. I have no idea how old they were; I never inquired.

Cross-Q. 109. What house did Mr. Drawbaugh live in at that time while he lived at Eberly's mills and before he moved to Mechanicsburg?

Ans. A frame house alongside of the blacksmith shop.

Cross-Q. 110. Did you ever take a meal there with the family?

Ans. No, sir; not there.

Cross-Q. 111. How many rooms were you ever in in that house, while they lived there?

Ans. Only two.

Cross-Q. 112. What were those two rooms used for by the family?

Ans. Parlor and kitchen.

Cross-Q. 113. Do you know whether the kitchen was used as a dining room?

Ans. I can't tell exactly; I think it was.

Cross-Q. 114. Was the kitchen carpeted?

Ans. I think it was.

Cross-Q. 115. Was the parlor carpeted?

Ans. Yes, sir.

Cross-Q. 116. Was not the carpet in the parlor a rag carpet made by Mrs. Drawbaugh herself?

Ans. I can't be positive on either of them.

Cross-Q. 117. How large a room was the parlor?

Ans. I never measured the room.

Cross-Q. 118. I want your best recollection of it.

Ans. It was a smallish room; I am not able to say just how big it was—how large.

Cross-Q. 119. Were there any other chairs in it except cane-bottomed chairs?

Ans. I do not remember what kind of chairs.

Cross-Q. 120. Do you know whether Mrs. Drawbaugh made the clothing for the family or not?

Ans. No, sir; I don't know.

Cross-Q. 121. How many times did you visit the family at Mechanicsburg?

Ans. I can't tell the number.

Cross-Q. 122. How far is Mechanicsburg from Hertzler's house?

Ans. Four miles, as near as I can tell.

Cross-Q. 123. Were your visits to them in Mechanicsburg in the day time or the evening?

Ans. In the evening.

Cross-Q. 124. Was Mr. Drawbaugh at home at any of those visits which you made to Mechanicsburg?

Ans. Yes, sir.

Cross-Q. 125. Was the elecric clock, or the telegraph instrument, ever talked about at their home, in Mechanicsburg, while you were there?

Ans. Not, as I can remember at this time.

Cross-Q. 126. Were they ever talked about at Mr. Drawbaugh's house, at Milltown, during any of your visits there?

Ans. Yes, sir.

Cross-Q. 127. Who talked about them there?

Ans. Different ones of the family.

Cross-Q. 128. Mention any names that you can swear positively that you recollect having talked of them in his family, at Milltown.

Ans. To be positive, I will not mention any name.

Cross-Q. 129. Were both the electric clock and the telegraph instrument talked about in his family at Milltown, or only one of them, and if the latter, which one?

Ans. Both.

Cross-Q. 130. Tell anything that was said about them in his family so far as you remember.

Ans. I remember well of them talking about them, but as to anything that was said in particular I couldn't mention anything.

Cross-Q. 131. What other of his inventions did you ever hear talked about in his family?

Ans. I can't remember any at this time.

Cross-Q. 132. Who were running the axle business while you lived there at Hertzler's?

Ans. As near as I can remember it was Shoop, Wils. Bear—the other names I have forgotten.

Cross-Q. 133. How many telegraph machines did you ever see in his shop?

Ans. I don't mind of ever seeing more than one.

Cross-Q. 134. How many electric clocks did you ever see in his shop?

Ans. I believe I only seen one that was finished.

Cross-Q. 135. Were there any other clocks there besides electric clocks?

Ans. I think there was.

Cross-Q. 136. How many, and give us a description of them so far as you recollect.

Ans. As near as I can remember, there was two; one of these big clocks and one a mantle clock.

Cross-Q. 137. Did you ever see one clock run by another clock there?

Ans. Not as I remember.

Cross-Q. 138. If you had seen it, do you think you would have remembered it?

Ans. I think I would.

Cross-Q. 139. Do you swear positively that you never saw any talking machine there, or only that you have no recollection of seeing any?

Ans. No, sir; I never saw any there.

Cross-Q. 140. How do you know but that you saw them there, and have forgotten the fact?

Ans. Anything like a talking machine would not have slipped my memory so soon as that.

Cross-Q. 141. How do you know it would not?

Ans. Anything like that is too big a thing to forget in so short a time.

Cross-Q. 142. What makes you think it is so big a thing?

Ans. As much talk as I have heard about it since I first heard about it, is enough to make anybody think it a pretty big thing.

Cross-Q. 143. If you had seen some of these talking machines at Drawbaugh's shop, while you lived there, but they were not explained to you and you were not told what they were, would you have remembered the fact of seeing them?

Ans. If they would have had any there it wouldn't be very likely that they would explain about the clock and not say anything about these.

Cross-Q. 144. And now, having made your argument that the facts assumed in my question couldn't be true, will you please answer the question as I put it, assuming them to be true?

Ans. This I can't say for sure.

Cross-Q. 145. Did you know anything about electricity when you lived there?

Ans. Nothing more than what I heard them talking about the clock.

Cross-Q. 146. Can you swear that there were not a dozen talking machines in Drawbaugh's shop during the time you lived at Hertzlers?

Ans. If there was one there I am positive that I never heard a word said about it while I was there.

Cross-Q. 147. Assuming that to be true, still it does not follow that there were not plenty of them there; does it?

Ans. I don't know as it does, but they would hardly have kept it as quiet as it was, as much as I was around Milltown.

[*Last part of the answer objected to by Mr. Hill, as not responsive, and mere opinion.*)

Cross-Q. 148. Do you consider it your duty to argue this case against me, or to answer my questions as I put them?

Ans. No, sir.

Cross-Q. 149. Did you ever hear of an automatic fire-alarm at Drawbaugh's shop, while you lived there, or ever see one?

Ans. I heard some talk about it; I never saw it, that I can just be positive of.

Cross-Q. 150. Whom did you hear talk about it?

Ans. I can't remember the names in particular.

Cross-Q. 151. Did you ever hear Drawbaugh or his family say anything about it?

Ans. I think I heard Mr. Drawbaugh talk about it; as for anything that was said, I can't remember.

Cross-Q. 152. Where did you hear Drawbaugh talk about it?

Ans. In the Milltown store, as near as I can say.

Cross-Q. 153. If you had seen it at his shop would you have remembered the fact?

Ans. It runs into mind that he said something about it there in the mill; it appears to me that I seen something of it, but I can't remember exactly how it was.

Cross-Q. 154. Do you swear that you did see it, or not?

Ans. I can't either way; but I think I seen it.

Cross-Q. 155. Did you ever see a shocking-machine at his shop?

Ans. No, sir; not that I know of.

Cross-Q. 156. If you had seen one, would you have remembered the fact?

Ans. I would if there would have been anything said about it; but as for a schocking-machine, I never saw one any place that I know of.

Cross-Q. 157. If there had been a shocking-machine there, do you think there would have been any talk about it on the part of Mr. Drawbaugh or his family with you; and if not, why not?

Ans. I think I would have heard them say something about it.

Cross-Q. 158. When you visited Mr. Drawbaugh's family, did they have any domestic employed in the house; and if so, who was it?

Ans. I don't understand the meaning of domestic?

Cross-Q. 159. I mean girl to do the housework?

Ans. None but their daughters, that I ever knew of.

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me this 30th day of December, 1882.

FRED. M. OTT,
Examiner.

EDMAN F. HARRO.

JOSEPH DITLOW, *being produced, sworn, and examined, saith:*

Examined by Mr. Storrow:

Q. 1. State your age, residence, and occupation?

Ans. My age is thirty; residence, Wheeler, Porter county, Indiana, occupation, farming.

Q. 3. Did you formerly live at or near Eberly's Mills?

Ans. Yes, sir.

Q. 4. Where was your father's house when you lived with him?

Ans. On Mr. Merkle's farm, close to Etter's mill, on the Yellow Breeches.

Q. 5. What was your father's name?

Ans. Abraham Ditlow.

Q. 6. Had you lived there many years before you went west?

Ans. Yes, sir.

Q. 7. When did you go west the last time, and if you have any railroad receipts, which help you to fix the date, please produce them?

Ans. In 1877; I produce receipt for shipment of "two boxes H. H. goods from Marysville, March 19, 1877, from Joseph Ditlow," marked "Joseph Ditlow, Wheeler, Porter county, Indiana."

Q. 8. Did you go west at or about the day named in that receipt?

Ans. Yes, sir.

Q. 9. Where have you lived since then?

Ans. Close to Wheeler, in Porter county.

Q. 10. Have you been east since that time in March, 1877, till this week?

Ans. No, sir.

Q. 11. Had you been in the habit of going west for the farming season before that?

Ans. Yes, sir.

Q. 12. When was it that you went west for the first time—about in what year?

Ans. It was either in 1869 or 1870.

Q 13. Were you east any summer between the time you first went, in 1869 or 1870, and the time you last went, in 1877?

Ans. Yes, sir.

Q. 14. How long have you been farming your present farm at Wheeler—when did you first take it?

Ans. It will be two years next March.

Q. 15. Had you farmed any farm at Wheeler before that; and if so, how long?

Ans. One farm, one year.

Q. 16. Whom had you worked for in Wheeler before you farmed for yourself, and how long?

Ans. Thomas Christman, one year, and Harmon Hardesty, five years.

Q. 17. Which did you work for first?

Ans. Harmon Hardesty.

Q. 18. Did you spend any summer east after you began to work for him?

Ans. No, sir.

Q. 19. When you came home for the winters before the last time you went west, in the spring of 1877, what did you consider your home east? And tell me some of the occupations you had during the winter.

Ans. I considered my home east; my principal business in the winter time was trapping.

Q. 20. I meant what family east did you look upon as your home—whose house?

Ans. My father's, as long as he lived, and afterwards my brother-in-law's.

Q. 21. Did your mother lived with your brother-in-law after your father's death?

Ans. Yes, sir.

Q. 22. What was your brother-in-law's name, and where did he live?

Ans. Jacob Evans; he lived at Etter's mill and Milltown.

Q. 23. What was his trade?

Ans. Miller.

Q. 24. Who used to go trapping with you winters when you came home?

Ans. My brother, Abraham Ditlow, always went with me; cousin David Ditlow went along part of the time; George Drawbaugh went along part of the time, and Hiram Drawbaugh went along part of the time.

Q. 25. When you were at home all these winters was the store at Eberly's mills a place of common resort and were you in the habit of going there?

Ans. Yes, sir.

Q. 26. Did Daniel Drawbaugh ever make you any part of a trapping kit; and if so, what?

Ans. Yes, sir; he made me a sheet iron stove.

Q. 27. Had you known him a good many years before that, and known him well?

Ans. Yes, sir.

Q. 28. Was he or not, pretty ready to show and explain his inventions and the things he had got up.

Ans. Yes, sir; he was.

Q. 29. Were you in the habit of going to his shop from time to time?

Ans. Yes, sir.

Q. 30. Please mention some of the things that you understood were of his getting up or invention, and which you saw there or heard of from him?

Ans. I seen the stave-cutter, the nail-machine, the old clock down stairs, the electric clock up stairs, a folding paper-bag machine, a wire wrapping-machine, his weather guage, patent needles—carpet-rag weavers—I seen some of his bells—bowl bells—shaped like a bowl; I heard him speak of a counting-machine, and he told me about his fire-alarm.

Q. 31. Where and from whom did you first hear that Daniel Drawbaugh had a talking-machine, or anything that was claimed to be a talking-machine?

Ans. In the Milltown store, from George Drawbaugh.

Q. 32. State how he came to speak of it, and tell me something that he had said about it?

[*Objected to by Mr. Hill, so far as the question calls for anything that George Drawbaugh said about it, on the ground that such statements are hearsay.*]

Ans. I was in the store when he came in, and he was laughing, and said: "I had lots of fun with Dan, talking on the wire." George would go to one end and listen, and Dan would go to the other end and talk.

Q. 33. Did he say what they would do, when George was to talk and Dan was to listen?

(*Same objection.*)

Ans. They changed then, end for end.

Q. 34. Who kept the store at that time?

Ans. Jerry Fry.

Q. 35. At which one of your visits home was this?

Ans. The last one.

Q. 36. Do you mean the winter between the fall of 1876 and the spring of 1877?

Ans. Yes, sir.

Q. 37. Do you think it was in the first part of that visit, or the latter part of that visit?

Ans. I think it was in the latter part.

Q. 38. When George gave you to understand at this time that his uncle Dan had a talking machine, did it strike you as a piece of news, or as something that you had known already?

Ans. I thought it was a big thing; it struck me as something new; I never had heard of it before in my life.

Q. 39. Did you ever, at Milltown, at any time, see any machine that you understood was a talking machine, or that you were told was a talking machine?

Ans. No, sir.

Q. 40. Please look at the instrument now shown you, marked "F," "B," "C," "C reproduced," "I," "A," "D," "E," "G," "O," "H," and tell me whether you ever saw any of them, or any machines substantially like them, at Mr. Drawbaugh's shop, at Milltown.

Ans. There is only one piece there that I ever remember of seeing at his shop and that is, this piece here. (Pointing to the magnet on "C reproduced.")

Cross-examined by Mr. Hill:

Cross-Q. 41. When did your father die?

Ans. In 1873.

Cross-Q. 42. In what year did you first work on a farm in Indiana?

Ans. It was either in 1869 or 1870.

Cross-Q. 43. In what year did you first work on the farm of Harmon Hardesty, which you have mentioned?

Ans. I think it was 1873.

Cross-Q. 44. Where did you spend the winter of 1873–74?

Ans. East.

Cross-Q. 45. Where did you spend the winter of 1874–75?

Ans. I think I was trapping in here that winter.

Cross-Q. 46. Where did you spend the winter that followed the fall of 1875?

Ans. In Indiana.

Cross-Q. 47. Where did you spend the winter that followed the fall of 1876?

Ans. In Pennsylvania.

Cross-Q. 48. About what time of the year did you generally return from Indiana to commence your trapping operations?

Ans. About September and October.

Cross-Q. 49. And about what time of the year did you generally go back to Indiana and go to farming again?

Ans. About March and April.

Cross-Q. 50. What were you doing and where were you for the three

years prior to commencing to work for Mr. Hardesty, in the spring or summer of 1873?

Ans. I was one year running around in Indiana, Michigan, and Ohio—I mean the summer season, not the winter season—and the summer before that I worked near Wooster, Ohio; the summer before that I was in the State of Pennsylvania somewhere; I don't know who I worked for.

Cross-Q. 51. Where were your trapping operations carried on?

Ans. On the Yellow Breeches creek, the Conedoguinet creek, and part of the time in Perry county, on a stream I have forgotten the name of.

Cross-Q. 52. Did you follow up the business pretty industriously?

Ans. Yes, sir.

Cross-Q. 53. What did you trap?

Ans. Muskrat, mink, coon, and skunk.

Cross-Q. 54. Where did you dispose of the skins which you obtained?

Ans. At Harrisburg, Pennsylvania.

Cross-Q. 55. To whom?

Ans. Mr. Goldsmith; I don't know his full name.

Cross-Q. 56. State his business and his place of business at that time and now, if you know.

Ans. He had a clothing store then; I don't know the name of the street; it is the street leading from the Harrisburg bridge to the canal—on the right hand side as you go out.

Cross-Q. 57. Do you mean Market street, that runs directly from the bridge to the railroad?

Ans. Yes, sir.

Cross-Q. 58. Was it your custom to bring your skins in as fast as you got them and dispose of them, or to keep them until the close of the trapping season, and then dispose of them in a mass?

Ans. We would always sell when we got too many on our hands.

Cross-Q. 59. You seem to have been a pretty industrious man, and I suppose you did not idle away much of your time around the store and other resorts of the village, did you?

Ans. I was around the store and machine-shop a good deal.

Cross-Q. 60. How far was the store from the machine shop?

Ans. I don't know the distance, but it is only a little ways.

Cross-Q. 61. What business did you ever see going on at Drawbaugh's shop during the four years before you moved west in 1877?

Ans. I can't recollect of any particular business; I wasn't around the shop any in the summer, just in the fall and spring. In the fall I would go trapping when I came back.

Cross-Q. 62. When, and by whom, were you first informed that your testimony was desired in this case?

Ans. It was last summer, about corn-planting time, by Mr. Comfort and Mr. Storrow.

Cross-Q. 63. Did they visit you at your home in Indiana?

Ans. Yes, sir.

Cross-Q. 64. Did they have a lot of talking-machines with them, like these on the table?

Ans. Yes, sir.

Cross-Q. 65. Did you come on from Indiana here on purpose to testify in this case?

Ans. Yes, sir.

Cross-Q. 66. How do you know that it was during your sojourn in Cumberland county, in the fall of 1876, or winter following, that you first heard of the talking-machine from George Drawbaugh?

Ans. Because I had never heard or seen anything of it before that.

Cross-Q. 67. We will assume that you never saw or heard anything about it before the time when George Drawbaugh told you about it, but how do you know that that took place that fall or winter, and not at some of your prior returns?

Ans. I rather think that if it had been there before—and as often as I have been in the shop—I would have seen or heard something of it, and I wouldn't have forgotten it.

Recess for lunch, until 2.30, P. M.

DECEMBER 30, 1882, 2.30, P. M.

Examination resumed pursuant to adjournment.

Present, same counsel.

Cross-examination of Joseph Ditlow, by Mr. Hill, continued:

Cross-Q. 68. Do you recollect who was present when George Drawbaugh first told you about Daniel Drawbaugh's talking-machines?

Ans. No, sir; I ain't certain, only of one man, Jeremiah Fry.

Cross-Q. 69. Did Jeremiah Fry hear the conversation?

Ans. I don't know whether he did or not; he was in the store-room.

Cross-Q. 70. How happened you and George Drawbaugh to be there together at that time?

Ans. I was in the store talking to Mr. Fry, and George came up from the shop and came into the store.

Cross-Q. 71. Did George Drawbaugh trap with you in the fall of 1876 or the winter following?

Ans. No, sir.

Cross-Q. 72. Did Harmon Drawbaugh trap with you that fall or winter?

Ans. Yes, sir; he was along part of the time.

Cross-Q. 73. Did you ever say anything to him or he to you, about his uncle Daniel's talking-machine?

Ans. No, sir; not as I remember of.

Cross-Q. 74. Did George Drawbaugh trap with you in the fall of 1874 or the winter following?

Ans. I don't recollect any more; he was out with me part of a winter; but I don't remember what year it was.

Cross-Q. 75. Did Harmon K. Drawbaugh trap with you that fall of 1874, or winter following?

Ans. No, sir.

Cross-Q. 76. Did George Drawbaugh or Harmon Drawbaugh trap with you in the fall of 1873 or winter following?

Ans. Harmon didn't, and I don't know whether George did or not.

Cross-Q. 77. Referring to the time when George told you of the talking-machine, was that in the fall of the year or the winter?

Ans. I don't remember whether it was in the fall of the year before I went trapping, or whether it was in the spring after I came back, before I went west.

Cross-Q. 78. Had you ever heard of such a thing as a talking-machine or telephone before George told you about his uncle Daniel's?

Ans. No, sir.

Cross-Q. 79. Did you think it was a very worderful invention when he told you about it?

Ans. Yes, sir.

Cross-Q. 80. What made you think so?

Ans. Because one man could talk to another, at a great distance, and not see each other.

Cross-Q. 81. Did you regard it as the most interesting and wonderful of all Daniel Drawbaugh's inventions?

Ans. Yes, sir.

Cross-Q. 82. Being so greatly impressed with it I suppose you went right down to his shop to see it for yourself; did you not?

Ans. No, sir.

Cross-Q. 83. And never went there to see it afterwards?

Ans. No, sir.

Cross-Q 84. And never spoke to Daniel Drawbaugh about it?

Ans. Not as I remember of.

Cross-Q. 85. And never spoke to anybody else about it before you moved west, in 1877?

Ans. Not as I remember of.

Cross-Q. 86. And never spoke to anybody in the west about it, until Mr. Storrow and Mr. Comfort came to see you last summer?

Ans. Yes, sir; I told Mr. and Mrs. Hardesty about it.

Cross-Q. 87. When did you tell them about it, and how came you to do so?

Ans. In the spring of 1877, after I went out there.

Cross-Q. 88. Were you living with them at that time?

Ans. Yes, sir.

Cross-Q. 89. When you told them about it, were they occupying the same farm that they occupy now, and living in the same house?

Ans. Yes, sir.

Cross-Q. 90. Who was present besides Mr. and Mrs. Hardesty when you told them about it?

Ans. I don't remember of any one.

Redirect by Mr. Storrow:

Q. Q. 91. If you had been living at Milltown a long time after you heard that Mr. Drawbaugh had a talking machine, do you think you think you would have gone down and heard it talked through?

[*Objected to by M. Hill, as leading, hypothetical, and not calling for a fact but for mere opinion.*]

Ans. Yes, sir.

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me, this 30th day of December, 1882.

FRED. M. OTT,
Examiner.

JOSEPH DITLOW.

ABRAHAM DITLOW, *being produced, sworn, and examined, saith:*

Examined by Mr. Storrow.

Q. 1. State your age, residence, and occupation.

Ans. My age is twenty-eight years; residence, Wheeler, Porter county, Indiana; occupation, farmer.

Q. 2. Are you a brother of Mr. Joseph Ditlow, who has just testified?

Ans. Yes, sir.

Q. 3. When were you last in the east before this week, and who went west with you that time?

Ans. In the fall of 1876; my brother, Joseph Ditlow, went west with me.

Q. 4. How many seasons had you been west before that, and when did you first go out west?

Ans. I wasn't out any before I went west in the spring of 1876.

Q. 5. Your brother testified that he came east in the fall of 1876, and went out in the spring of 1877, to Wheeler, at a time which he fixes by a railroad shipping receipt, as about March 19, 1877; was that the time when you last went out with him?

Ans. Yes, sir.

Q. 6. Have you been east since then, till this week?

Ans. No, sir.

Q. 7. For a dozen of years before you went west, in 1877, what place or places in the east did you consider your home? I mean whose houses?

Ans. Where my parents lived.

Q. 8. When you came home from the west, did your parents keep house; and if not, whose house did you then consider your home?

Ans. Mr. Evans', my brother-in-law.

Q. 9. Had you known Mr. Drawbaugh, and been in the habit of going to his shop, before you went west?

Ans. Yes, sir.

Q. 10. What had led you to go to his shop, and did you go there much or little?

Ans. I went there much; I went there to see, and loaf around in his shop.

Q. 11. Did you have any particular intimacy with any of the Drawbaugh family, and if so, which one?

Ans. George Drawbaugh.

Q. 12. Was there any season in which he and you did trapping on

the Yellow Breeches, in the neighborhood of Milltown, and lived at home, instead of camping out; if so, state when it was?

Ans. In the fall of 1873.

Q. 13. Where did you keep your trapping kit that winter?

Ans. I can't answer that; all the trapping kit we had were the traps, and they were out in the water; the skins we kept in the wagonmaker's shop.

Q. 14. Did you use to go to Daniel Drawbaugh's shop, with George Drawbaugh, considerably?

[*Objected to by Mr. Hill, as leading.*]

Ans. Yes, sir.

Q. 15. Tell me whether or not you and George were in the habit of seeing, at his uncle Daniel's shop, the things which his uncle Daniel had gotten up or invented?

[*Same objection.*]

Ans. Yes, sir.

Q. 16. Will you mention some of the things which you remember of having seen there, or heard mentioned as being there, that Daniel Drawbaugh claimed to have gotten up or invented?

Ans. In the first place is the weather-gauge; next is a machine that he had—I don't know what he called it—to wrap wire on a spool; then he had a machine to wrap something on the wire; I couldn't tell you what it was that he wrapped on the wire; he had a clock that I suppose run by electricity; he said that when he had it finished he was going to take it to Mechanicsburg; he made a model, and was going to make a machine to sow plaster—to spread it on the ground even; he thought it would be a nice thing for the farmers; but he never finished it. He had a needle to sew carpet rags without thread; and he had some rams there, but I don't know much about them—only what I heard him say; I never paid much attention to them. I think that is about all—only the nail-machine there. Another thing—I heard George Drawbaugh say that he was making a talking-machine.

Q. 17. When was it, that you first heard George Drawbaugh speak of a talking-machine, and where did you hear him speak of it?

Ans. It was in the spring of 1877, in Milltown, in the store.

Q. 18. Tell me what he said about it?

[*Objected to as calling for hearsay.*]

Ans. He came in the store laughing, and said that he had lots of

fun with his uncle talking through that wire. George would get at one end and Dan at the other, and Dan would talk to George, and then they changed places, and George talk to Dan; and he said they could understand each other first rate.

Q. 19. Did George speak of it as if it were a novelty to him at that time, or as if it were an old thing, that he had been accustomed to half a dozen years?

[*Objected to by Mr. Hill, as leading, calling for hearsay, and asking for the mere impression or opinion of the witness.*]

Ans. He thought it was a big thing—a new thing. He said his uncle was going to make a fortune out of that, if he got it to work all right.

Q. 20. When you heard from George, on that occasion, that his uncle Daniel had a talking machine, did it impress you as a new thing, or did it strike you that you yourself had heard of it before?

Ans. Yes, sir; I never heard of it before, and I couldn't believe it very handy.

Q. 21. Have you or have you not ever seen, at Daniel Drawbaugh's shop, or anywhere in Milltown, any instrument which you were told was a talking-machine, or which you understood was a talking-machine.

Ans. I have never seen anything of the kind.

Q. 22. Please look at the instruments now shown you marked "F," "B," "C," "C reproduced," "I," "A," "D," "E," "G," "O," "H," and tell me whether you ever saw those, or any instruments, substantially like them at Daniel Drawbaugh's shop, or anywhere in Milltown.

Ans. That is all I remember of seeing—something like that, (*indicating magnet on "C reproduced."*) He had a good many things like that, large ones and small ones lying around in the shop; I never saw a box like that, ("H;") I seen bells; he had plenty of them.

Q. 23. Did Mr. Daniel Drawbaugh ever help you to make any of your contrivances to use in hunting or trapping; if so, what?

Ans. He made me a lot of stretchers once.

Q. 24. While you would be at home and around Milltown, were you in the habit of going into the store pretty frequently to talk?

Ans. Yes, sir; every day I was in Milltown.

Cross-examined by Mr. Hill:

Cross-Q. 25. When did you first learn that your testimony would be desired in this case?

Ans. Last June, (1882.)

Cross-Q. 26. Who told you?

Ans. Mr. Comfort and Mr. Storrow.

Cross-Q. 27. In Indiana?

Ans. Yes, sir.

Cross-Q. 28. How long did you talk with them about the case?

Ans. I don't know the exact time; probably a couple of hours.

Cross-Q. 29. Whom did you talk with first; Mr. Comfort or Mr. Storrow?

Ans. Mr. Comfort.

Cross-Q. 30. Was your brother Joseph present while you were talking with Mr. Comfort?

Ans. Yes, sir.

Cross-Q. 31. Where did that conversation with Mr. Comfort take place?

Ans. At the house where we lived.

Cross-Q. 32. You and your brother live together in the same house; do you?

Ans. Yes, sir.

Cross-Q. 33. Is that house in the country; and if so, what is the nearest village or railroad station, and how near is it?

Ans. Yes, sir; Wheeler station, on the Pittsburgh and Fort Wayne road; I always call it about a mile; I don't know the exact distance; it may be a little further.

Cross-Q. 34. Referring to the interview between you and George Drawbaugh at the store, when he talked of his uncle's talking machine; was that in the day time or evening?

Ans. I think it was in the evening; I ain't certain about that.

Cross-Q. 35. How happened you to be there at the store then?

Ans. Because I had no other place to go to, I guess.

Cross-Q. 36. Who was present?

Ans. I wouldn't mention no particular name, only my brother; he was there, and there was a good many in the store.

Cross-Q. 37. Can't you mention anybody who was there besides your brother and yourself and George Drawbaugh?

Ans. No, sir; none that I am certain of.

Cross-Q. 38. Give us your best recollection even if you are not certain.

Ans. I am satisfied the clerk of the store was there, Mr. Fry; he

ought to have been there if he was not; I wouldn't be sure whether he was there, for I couldn't tell.

Cross-Q. 39. Did a general conversation take place about this wonderful talking machine after George Drawbaugh came in, or was it confined to yourself, your brother and George Drawbaugh?

Ans. He spoke it out public to all; we all listened to him and wanted him to explain all about it.

Cross-Q. 40. How long did that conversation last?

Ans. It didn't last very long.

Cross-Q. 41. And you can't remember a soul who was present, except you three; can you?

Ans. No; to be certain of, I couldn't.

Cross-Q. 42. Have you any impression as to the name of any other person present, except you three and Mr. Fry?

Ans. I don't know how to answer that.

Cross-Q. 43. You either have or have not; so that all there is to do is to tell the truth, and I repeat the question.

Ans. I have not.

Cross-Q. 44. How do you know that interview was in the spring of 1877, and not at some prior time?

Ans. Because I never heard of such a thing before.

Cross-Q. 45. That is the only reason why you were able to fix the time?

Ans. Yes, sir.

Cross-Q. 46. You have testified that you got the impression at that interview that that talking machine was a new thing with Mr. Drawbaugh; did you get the impression that it was a very new thing, just made by him?

Ans. Yes, sir; I thought it was, by the actions of George.

Cross-Q. 47. As you seem to remember your impression pretty clearly, give us your opinion as to whether Mr. Drawbaugh could have had that machine a month or two prior to that time?

Ans. He couldn't have had it, because I would have knowed something of it. Whenever he got anything new up I always seen it, because I would be with George and he would show it to me. It was a new thing to me.

Cross-Q. 48. You are entirely confident, then, that Mr. Drawbaugh couldn't have had a talking-maching in his shop a month prior to that

interview at the store, without your seeing it and remembering it; are you?

Ans. Most surely I am sure of that.

Cross-Q. 49. Are you as sure of that as you are of any other thing you have testified to?

Ans. Yes, sir.

Cross-Q. 50. Are you as sure of that as you are that the interview at the store was in 1877?

Ans. Yes, sir.

Cross-Q. 51. And you would be just as likely to be mistaken about the one as the other, would you?

Ans. I wouldn't be mistaken at all.

Cross-Q. 52. But if there were any mistake in your testimony it would be as likely to be about one of those things as the other; would it?

Ans. No, sir, it wouldn't.

Cross-Q. 53. Which one would it be most likely to be about?

Ans. It wouldn't be about any. When I know a thing I know it.

Cross-Q. 54. And you know one of those two things just as well as you do the other, do you?

Ans. Yes, sir.

Cross-Q. 55. Within the past few weeks, Mr. Rufus E. Shapley, of Mechanicsburg, and his brother-in-law, Mr. Landis, two witnesses called by the complainants in this case, have testified that on the 3d day of October, 1876, they saw a talking-machine at Mr. Drawbaugh's shop, at Milltown, and he told them that it was to supersede the telegraph, and to revolutionize the world. If their testimony is to be believed, a talking-machine was not so new a thing at Mr. Drawbaugh's shop, in the spring of 1877, as you have been led to believe; was it?

[*Objected to by Mr. Storrow as an incorrect statement of the testimony of Mr. Shapley and Mr. Landis, in this; that their testimony was that all that Mr. Drawbaugh was able to show them was part of an apparatus; that he did not venture to attempt to talk through it for them; and that there is nothing in their testimony tending to show that he then had any apparatus by which a conversation could be carried on over a wire, from one place to another, as stated in the remarks of George Drawbaugh, which are the subject of this cross-examination, but the contrary.*

Respondent's counsel replies: First, that he appeals to the

record of their testimony to show the substantial correctness of his statement; and he protests against the interruption just made, and against the argument spread upon the record in the guise of an objection.

Complainants' counsel replies that the question was purely argumentative, and that the assumptions in it were such as to call for notice on the spot.

Respondent's counsel replies that he thinks the Court can judge of both of those points without further argument at this time.]

Ans. It was a new thing to me and my brother.

Cross-Q. 56. When you first heard of the machine at Drawbaugh's shop, by which conversation could be carried on between distant places; what was the machine called?

Ans. A tal ing-machine.

Cross-Q. 57. When did you first hear the word "telephone?" Was it before, or after you moved west in the spring of 1877?

Ans. It was after.

Cross-Q. 58. Do you know Mr. D. A. Hamacher, a schoolmaster, who formerly taught school about Milltown?

Ans. No, sir.

Cross-Q. 59. Mr. Hamacher and some of his scholars have testified in this case, that he with a portion of his school, on the 2nd day of February, 1876, visited Mr. Drawbaugh's shop, and that he saw several talking-machines there at that time; assuming that to be true, then there were talking-machines at Mr. Drawbaugh's shop for over a year before you moved west in the spring of 1877; were there not?

Ans. I didn't see anything of them.

Cross-Q. 60. Did you and your brother come on here from Indiana together to testify?

Ans. Yes, sir.

Cross-Q. Do you own a farm out there, or do you only work on a farm as a hired man?

Ans. We rent—Joe and I.

Redirect by Mr. Storrow:

Q. Q. 62. You testified that when Mr. Comfort and Mr. Storrow visited you last summer, Mr. Comfort was the first of the two who talked

to you about the talking machine; Mr. Storrow was present and listening to the conversation all the time; was he not?

Ans. Yes, sir.

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me, this 30th day of December, 1882.

FRED. M. OTT,
Examiner.

ABRAHAM DITLOW.

Adjourned until January 1, 1883, at ten, A. M.

JANUARY 1, 1883, 10, A. M.

Examination resumed, pursuant to adjournment.

Present, same counsel.

JACOB EVANS, *being produced, affirmed, and examined, sai'h:*

Examined by Mr. Smith:

My age is thirty-one; residence, Eichinger's Mill, Fishing creek valley, York county, Pennsylvania; occupation, miller.

Q. 1. If you have ever lived in Milltown, Cumberland county, state when you first went there to live, and from what place you came when you first went there?

Ans. I first came about Milltown in the fall of 1872. I had come from Perry county, near the Juniata river, near Losh's run, just above Aqueduct station. I had been working at a coal wharf on the canal there.

Q. 2. Before you first came to Milltown, did you know Daniel Drawbaugh or any other persons about there?

Ans. No, sir; I was an entire stranger when I came there about Milltown.

Q. 3. What did you first do when you came there, and for whom, if any one, did you first work?

Ans. I started in first husking corn for Jonathan Fry, by the day.

Q. 4. Who else did you work for at that time, while you resided in Milltown, and to what place did you go when you went away?

Ans. I husked corn for Jeremiah Fry, Jonathan's brother, and I husked corn back and forwards that fall; and afterwards, when we

were done husking corn at both places, I had made a bargain with Jerry to stay with him, by the month, through the winter, but I only stayed with him part of the winter; and during that winter sometime, I went to Zacharias' at the big mill, at New Cumberland.

Q. 5. State whether or not you became acquainted with Daniel Drawbaugh before you went to New Cumberland.

Ans. I didn't know much about Dan Drawbaugh at the time; I don't think I was acquainted with him at all before I went to New Cumberland—not that I remember.

Q. 6. How long did you remain at New Cumberland, and what did you do while you were there?

Ans. I remained there something like six or seven months; I worked at milling for Zacharias.

Q. 7. To what place did you go from there, and what did you do?

Ans. From there I went to my father's, near Dillsburg, and helped them through hay-making and harvest?

Q. 8. Where did you then go?

Ans. I went to Dayton, Ohio.

Q. 9. How long did you remain there, and what were you doing while there?

Ans. I was there about a month or two; I worked at burr-dressing while I was there.

Q. 10. Do you remember what year that was?

Ans. 1873.

Q. 11. Where did you go from there?

Ans. From there I came back to my father again.

Q. 12. How long did you remain with your father, and where did you go next?

Ans. A couple of weeks with my father. From there I went to Lantz's mill, and worked for Samuel O. Drawbaugh in the mill.

Q. 13. Do you know whether that Drawbaugh was any relative of Daniel Drawbaugh?

Ans. He is no relative that I know of, and if he is it is very distant.

Q. 14. How far was that place from Milltown?

Ans. About five or six miles.

Q. 15. How long did you remain there?

Ans. Something like thirteen or fourteen months.

Q. 15. Where did you go next?

Ans. To my wife's parents; that is, I went there next and started in

at Etter & Shanklin's mill on the 1st of November, or along there, in 1874, staying with my wife's parents.

Q. 17. Were you married about that time; and if so, what was your wife's name before you were married?

Ans. I was married the September before that, and my wife's name before we were married was Mary A. Ditlow.

Q. 18. Was she a sister of the Ditlows who were here and testified in this case last week?

Ans. Yes, sir.

Q. 19. How long did you continue to work at Etter & Shanklin's mill, and in what capacity were you employed while there?

Ans. During the winter I worked as helper, and in the spring—in April—I took charge of it as head miller. I worked at so much a month—had it that way. I was there from the beginning of November, 1874, till sometime in September, 1875; but it was from April to September that I had charge of it as head miller.

Q. 20. When you went there, was there a foot-bridge across the stream; if so, did anything happen to it while you were there?

Ans. Yes, sir; the foot-bridge was across the stream, and it was taken away, too, during that winter by high water and ice.

Q. 21. Did you see it taken away, and was it taken away in the daytime or in the night?

Ans. No, sir; I didn't see it taken away; it was taken away during the night; I found out in the morning that the foot-bridge was gone, or in the after part of the night during my run—between that time and morning.

Q. 22. In the ordinary condition of the water, what was the character of the stream between that mill and Hake's mill, some miles above; was there water enough to allow the use of boats, and is the water perfectly smooth, or are there ripples or rapids in the stream?

[*Objected to by Mr. Hill, as calling for an opinion on a subject upon which the witness has not been shown to be qualified to form a correct one, from any experience or observation of his own.*]

Ans. The water above the mill was perfectly smooth for some distance up; above the machine shop there were some ripples and some smooth water. As far as I know, you can get through with a boat—that is, with a light boat.

Q. 23. How far was the house in which you lived from the mill?

Ans. It was just right in front of the mill; it couldn't have been more than thirty or forty feet from the mill; it was right across the road.

Q. 24. How far was the mill from Daniel Drawbaugh's shop in Milltown?

Ans. As near as I can tell you about one fourth of a mile to either place.

Q. 25. Did you become acquainted with Daniel Drawbaugh while you worked at the mill?

Ans. Yes, sir; that was, as near as I can recollect, the first acquaintance, while I lived there.

Q. 26. Where did you used to meet him or see him?

Ans. As near as I can tell you it was there at the mill, that I first met him—my first meeting of him as near as I can get at it.

Q. 27. Were you accustomed to go to his shop any while you worked at that mill?

Ans. No, sir; I don't know that I have been there at his shop while I was there.

Q. 28. When you left that mill in September, 1875, where did you go?

Ans. To Milltown.

Q. 29. What did you do there; in whose employment were you, if anyone's?

Ans. I was in no regular employment. I worked around. I worked back and forward for Bowman at the mill, during that winter, by the day.

Q. 30. What did you next do after working for Bowman?

Ans. The spring following on the 1st of March I took charge of the mill at Milltown as head miller for Dellinger & May.

Q. 31. How long did you remain in charge of that mill or work in it in any capacity, and by whom were you employed besides Dellinger & May?

Ans. I was working as head miller from March, 1876, until November, 1878, and then they failed—Dellinger & May—or concluded that they were not able to make up the wages by the month any more, and during that winter I worked back and forward in the mill by the day for Dellinger & May; that is, from November on until February sometime, when Swartz started in there. I worked by the day, when he first commenced, some time in February, 1879; but I can't tell the number of days. I worked for him until he was ready to start in himself. I worked in 1880,

through March. I can't tell whether I worked the whole month or not, but think it was only the latter part two weeks—for Swartz again. In the spring of 1880 I took charge of it myself for the shares, and I continued on until the spring of 1881. That ended it there at that mill.

Q. 32. When you moved up to Milltown, in what house did you first live?

Ans. George Leonard's.

Q. 33. When did you move into another house, and whose house was it?

Ans. The spring following 1876—it was Dellinger & May's.

Q. 34. At the time you moved to Milltown, where did Daniel Drawbaugh live—in what house?

Ans. There where Dan Fettrow is living now.

Q. 35. Did you know of his moving his family to Mechanicsburg in the spring of 1876, and bringing them back again the year afterwards?

Ans. Yes, sir.

Q. 36. In what house did he live when his family first came back?

Ans. He moved to the mill house, right in front of the mill.

Q. 37. How long did he stay in that house, and into what house did he move when he left it?

Ans. He remained in there till the next spring following, and then moved into the red house, right back of the mill.

Q. 38. Who moved into the house in front of the mill when he left it?

Ans. I moved in myself.

Q. 39. How long did you live there, and where did you move next?

Ans. I remained there till the next spring following, and next I moved down to Eichinger's mill, and there I am yet.

Q. 40. Did your family live at this last-mentioned place while you were running the Milltown mill on shares, after you worked for Swartz?

Ans. No, sir; they didn't live at the last-mentioned place.

Q. 41. I understand you to say that you moved into the house opposite the mill in the spring of 1878, when Drawbaugh moved out, and that you moved away from that house the following spring, which would be 1879; did you mean to be so understood, and where did you have your family from the spring of 1879 until you moved to your present place of residence?

Ans. Yes, sir; I had my family in George Leonard's house at the upper end of Milltown through 1879.

Q. 42. Where was your family during 1880, while you were running the mill on shares?

Ans. In the mill-house in front of the mill.

Q. 43. So you moved your family back into that house when you took the mill, and moved from there to your present place of residence; did you?

Ans. Yes, sir.

Q. 44. Were you accustomed to see Daniel Drawbaugh and the members of his family about the village after you moved there in September, 1875, and while they lived in the house opposite the mill and in the red house back of it?

Ans. Oh, yes, I would see them every day about the village, but never visited them any, that I recollect of.

Q. 45. What was the appearance of the members of his family in respect to their dress as compared with other people in the village?

[*Objected to by Mr. Hill, as incompetent and immaterial.*]

Ans. They were always favorably dressed, nicely dressed—more especially the girls.

Q. 46. State whether or not Mr. Daniel Drawbaugh traded with you at the mill; and if so, whether he bought for cash or on credit?

Ans. Yes, sir; he traded with me some on cash and some on credit.

Q. 47. Did he come to the mill himself to buy or did members of his family come?

Ans. Generally members of his family; it was very seldom that he came.

Q. 48. Did you ever hesitate to let him or his family have whatever they wanted from the mill on credit?

Ans. No, sir; I never refused them.

Q. 49. Was there any relative of his living at Milltown to whom you would not sell on credit, or disliked to sell on credit; if so, state who it was?

[*Objected to by Mr. Hill, as not rebutting, as irrelevant, immaterial and incompetent.*]

Ans. Yes; there was a nephew living there whom I have refused; and yet at the same time I have sold to him on credit already; his name is George Drawbaugh.

Q. 50. State whether or not you ever sold anything to him upon orders from Daniel Drawbaugh, and charged the things he bought to Daniel Drawbaugh?

[*Same objection.*]

Ans. Yes, sir, but not myself, I didn't; that was Dellinger and May.

Q. 51. Did you, while you lived at Milltown, know a man by the name of Daniel Wesley Smith?

Ans. Yes, sir; I knowed him, but I ain't certain about his Daniel Wesley; but I knowed him as Wesley Smith.

Q. 52. Did you know where he lived—whether it was in Milltown or not?

Ans. He was there in Milltown awhile—only a short time.

Q. 53. State whether or not you used to see him around there after he moved away; and what he was doing there, if you know.

Ans. I seen him there afterwards frequently; he passed through there peddling.

Q. 54. What was he peddling, and did he carry his goods with a team or in a pack?

Ans. He carried his goods in a pack; he was peddling notions.

Q. 55. State whether or not he came to your house with his goods, and whether you and your wife purchased from him.

Ans. Yes, sir; he was in my house different times; my wife used to buy things from him, but I don't think that I ever did—not that I remember of.

Recess for lunch, until half-past two, P. M.

January 1, 1883, 2.30, P. M.

Examination resumed pursuant to adjournment.

Present same counsel.

(*Examination of Jacob Evans by Mr. Smith, continued.*)

Q. 56. Did Wesley Smith come to your house any, while you lived opposite the mill and afterwards?

Ans. Yes, sir; while I lived there he came a few times; but whether he came afterwards I can't say; I don't recollect.

Q. 57. Did you have a child born while you worked for Dellinger & May; if so, when was it, and in what house were you living?

Ans. Yes, sir; I was living in Leonard's house, and it was born in January, 1877.

Q. 58. What rent did you pay for that house?

Ans. I didn't pay any rent for that year and nine months; Dellinger & May had the contract between them for that; it didn't cost me anything.

Q. 59. Did you pay rent for any of the houses that you lived in; if so, for which ones and how much?

Ans. Yes, sir; when I first moved to Milltown I paid rent for that house; as near as I can tell, something like fifteen dollars from September on till spring; and the year that Dellinger & May had the mill rented to Swartz, I lived in one of Leonard's houses again; I paid thirty dollars that year for that house.

Q. 60. Who owned the house opposite to the mill, where you lived after Drawbaugh moved out?

Ans. Dellinger and May.

Q. 61. I understood you to say that when you first moved to Milltown, you lived in a house owned by George Leonard, and that you then, in the spring following—1876—moved into Dellinger & May's house, and remained there until the spring of 1878; did you mean to be understood that you moved into the Dellinger & May house in the spring of 1876, or in the spring of 1877?

Ans. I moved into George Leonard's house when I moved to Milltown, and I remained there until the spring of 1876; then I moved to Dellinger & May's house, and stayed in Dellinger & May's house until some time in July, 1876, when I moved into Leonard's house.

Q. 62. Was that the same house of Leonard's that you moved into when you first moved to Milltown, or a different house?

Ans. A different house.

Q. 63. And it was in this second house that your child was born; was it?

Ans. Yes, sir; it was in the second house of Leonard's that I moved into, that the child was born.

Q. 64. Did you know anything about a clock company that was formed some time in 1878, to manufacture electric clocks?

Ans. Yes, sir; I know a little something about it.

Q. 65. Did you know who the parties were that were interested in it, or any of them?

Ans. I knew some of them—Shettle, Dan. Drawbaugh—I guess that

is about all I can say now. There was one that I know, but I can't recollect now. It wasn't Chellis. He was down there a good deal—I don't know whether he had anything to do with it or not—about Chellis.

Q. 66. Was Shettle's name Jacob E. Shettle?

Ans. I can't say what his middle letter was. His first name was Jacob.

Q. 67. Did he have a relative living at Milltown, if so, who was it and what was the relationship?

Ans. Yes, sir; the way I was always told, he had—that he was a nephew of Squire J. B. Drawbaugh's.

Q. 68. After you went to Milltown to live were you or not accustomed to go to Daniel Drawbaugh's shop; if so, how often did you go and on what occasions?

Ans. It wasn't as a customary thing that I went there. Of course I was there, and generally on Sunday when I went there, for during the week I was generally too busy for anything of that kind.

Q. 69. Were other people accustomed to go to that shop on Sunday to any extent?

[*Objected to by Mr. Hill as leading, the word "accustomed" apparently being intended to put into the witness' mouth a suggestion for which his previous testimony has given no foundation.*]

Ans. Yes; every now and then there would some go down.

Q. 70. Do you remember what business was carried on in the shop when you began to go there and afterwards?

Ans. As near as I can remember, the first time I was in the shop they were making some of them axles and clocks; they were working at that and changing the shop during that time; that is, more than the first time I was there; it was during the time I was in Milltown.

Q. 71. Do you remember who the parties were who were carrying on the axle business? If so, name them, so far as you remember their names.

Ans. I know some of them; there was Wilson Bear, Captain Moore, and Kline; I can't tell what his name was, but think it was Jacob; he lived in Camp Hill there.

Q. 72. Did you ever meet any of these parties there? If so, which ones, and whom did you meet most freqnently?

Ans. I never met them at the shop, that I remember. I seen them

go down; and Kline would stop at the mill once in a while, and talk to me there.

Q. 73. If Mr. Drawbaugh ever showed you any machines or contrivances in his shop which you understood to have been gotten up and invented by him, will you state what they were?

Ans. Yes, sir; he showed me some of the things—the electric clock, and I seen his telegraph operator there; and magnets—I seen them lying around there—more than one; and different things that I can't recollect now, unless they were mentioned.

Q. 74. Do you remember how the telegraph instrument was operated?

Ans. I don't know anything more—it is something that I know so little about that I can't explain, but it was something that he worked up and down; I don't mind whether it was a magnet or a battery. It was something that I knew so little about that I didn't pay much attention to it at the time when he was showing it to me, and I forgot about it afterwards.

Q. 75. Do you remember anything about a machine for wrapping wire?

Ans. Yes, sir; I remember it, but I can't describe it.

Q. 76. Anything about a weather-guage?

Ans. I remember nothing about that.

Q. 77. Do you remember anything about hydraulic rams or force pumps?

Ans. Yes, sir; I know of him having them there, and I seen them there.

Q. 78. Do you know anything about a machine for folding paper-bags?

Ans. I never seen it, but I heard of it; Dan had talked something to me himself; I don't remember what was said, but know he talked about it

Q. 79. Do you remember anything about a fire-alarm apparatus?

Ans. No, sir; I remember nothing about that.

Q. 80. Did you ever see any talking-machines there?

Ans. No; I can't recollect that I ever seen anything of that kind at the shop, and I don't think that if I would have, my mind would be that treacherous that I would have forgotten; but I can't remember nothing.

[*The expression of opinion in the above answer objected to by Mr. Hill as mere opinion and incompetent.*]

Q. 81. Will you look at the several machines which the examiner has placed upon the table, and state whether you ever saw any of them in Mr. Drawbaugh's shop, or machines like them?

Ans. No, sir; I can't remember of seeing anything like it in the shop; I don't remember.

[*The machines on the table are "A," "B," "C," "C reproduced," "D," "E," "F," "G," "L," "M," "N," "O," "Q," "H," and "J."*]

Q. 82. Will you state whether you ever heard Mr. Drawbaugh say anything about talking machines; and if so, what it was and when it was?

Ans. I can't remember anything that I heard Drawbaugh individually himself say; that is, Dan. Drawbaugh.

Q. 83. Did you ever hear anybody else say anything about them; and if so, what was it, and when, and who were the persons?

[*Objected to as not rebutting, and as calling for hearsay.*]

Ans. Yes, I heard different ones talk about it; Dellinger and I had talked about it, and William Fettrow—that is Dan. Fettrow's son—talked about being down there and talking through it—him and Dan together; and Harry Drawbaugh, Dan's son; I heard or was told by other ones that Harry and Dan had been at it, talking through it; we had different conversations. As near as I can get at it, it was some time during 1877 when this talk was done; the talk that I heard about it was in the store and the mill-office—those two places.

Q. 84. Do you know whether Mr. Drawbaugh's son Harry went to Mechanicsburg with the family the year that they lived there, or was with his father at Milltown?

Ans. He went to Mechanicsburg with the family; he was down once or twice during the year and might have stayed a week or so or a few days.

Q. 85. How old was Mr. Fettrow's son at that time?

Ans. I hardly know, but I guess he was about eighteen or nineteen; he wasn't of age anyhow at that time.

Q. 86. Did you after that, on any occasion, see anything about Mr. Drawbaugh's shop which you thought might have been connected with the talking-machines you had heard spoken of; and if so, state what it was, and how you came to see it?

Ans. I don't remember of seeing anything in the shop, but outside of the shop—it was attached to the shop though—I seen a wire run across to the spruce hill there; and the way I come to see that—it was

in 1877, just before Christmas, and I went down there to a cut a spruce to make a Christmas tree for my child, and the thought just struck me—but I don't know whether that was the idea or not—that that was for the talking-machine—that wire stretched out there—the limbs were cut off a spruce tree and part of the wire was wrapped around it; I thought this because the talk had been before this in that year.

Q. 87. Did you ever hear anybody say when or why that wire was put up?

[*Objected to by Mr. Hill as calling for hearsay.*]

Ans. I never heard anybody say when it was put up nor why it was put up; the thought just struck me when I seen it, that they might be experimenting with the talking-machine, one being out on the spruce hill and the other in the shop—experimenting on it in that way.

Q. 88. Do you remember a controversy which Daniel Drawbaugh had with David Hauck in 1869; and did you testify in his behalf at that time?

Ans. Yes, sir; I remember it, and I testified in his behalf.

Q. 89. Has Mr. Drawbaugh ever spoken to you about testifying, and summoned you as a witness in this case; if so, when was it, and where did you go in response to the summons?

Ans. Yes; he talked to me a little about it in 1881, and also summoned me as a witness in 1881, but I can't tell the day and the month of the year; I have forgotten that. I went to Harrisburg in response to that summons.

Q. 90. Did any other person go with you as a witness at that time who testified; if so, who was it?

Ans. Yes, sir; David Good; he testified.

Q. 91. To what place of Harrisburg did you go, and whom did you see there; and were you or not asked what you knew about Drawbaugh's talking machine; if so, by whom?

Ans. As near as I can tell I think it was in Lawyer Jacobs' office; I ain't altogether certain though, but I think it was Lawyer Jacobs' office. I seen Dan. Fettrow, Dan. Drawbaugh, Jacobs; and I seen a couple more there, but I can't just tell who they were. I was shown the instruments, and asked whether I knew anything about them, and so on; but I can't remember by whom—not now I can't; I may by studying it up.

Q. 92. Were the instruments which were shown you then the same or some of the same which have been shown you here this afternoon, or like them?

Ans. I won't say they were the same, but they were something like them; I won't say they were not the same either.

Cross-examined by Mr. Hill.

Cross-Q. 93. If you had not gone down there to cut that spruce tree, you wouldn't have seen that wire extending from Dan's shop to the hill, would you?

Ans. Hardly likely at that time, but I wont say but what I might have seen it afterwards.

Cross-Q. 94. You don't know how long that wire has been there; do you?

Ans. No; that I don't know.

Cross-Q. 95. And you don't know whether it was put there for telephone purposes or not, do you?

Ans. No; that I am not certain about. The idea just struck me because we had been talking about his experimenting.

Cross-Q. 96. In what direction from the shop was that hill to which the wire ran?

Ans. North.

Cross-Q. 97. What part of the shop did the wire run to or from?

Ans. It ran into the north side of the shop somewheres; I can't tell exactly where now; I have forgotten that.

Cross-Q. 98. Was there one wire or two?

Ans. One.

Cross-Q. 99. What kind of a wire was it?

Ans. It was common, light wire?

Cross-Q. 100. Copper or iron?

Ans. That I didn't examine.

Cross-Q. 101. Was it wrapped or not?

Ans. No, sir; it wasn't wrapped; it was galvanized, as near as I could tell.

Cross-Q. 102. You have referred to conversations that you remember taking place with various persons, with regard to Drawbaugh's telephone or talking-machine; do you remember all the conversations that you heard about it, or all the parties that you heard talk about it, or were there other conversations, or conversations with other parties, the particulars of which you are not able to remember at this time?

Ans. No, I don't remember all the parties, nor all the conversations; there was conversations ontside of what I referred to.

Cross-Q. 103. When were you in Dayton, Ohio?

Ans. In the summer of 1873.

Cross-Q. 104. For whom did you work there at dressing mill-burrs?

Ans. Davidson; I don't know his first name; it was a shop where they manufactured the burrs.

Cross-Q. 105. In what part of the city was the shop?

Ans. As near as I can tell it was in the western part, not very close to the river Miami, and not very far off.

Cross-Q. 106. Did you ever know anything about diamond mill-burr dressing machines, made by Daniel Drawbaugh?

Ans. I seen some parts of it already.

Cross-Q. 107. Did you ever use one, or try one?

Ans. I never tried one nor never seen it work.

Cross-Q. 108. Where and when did you first see the parts of it that you refer to?

Ans. In the Milltown mill; I can't remember the time when it was.

Cross-Q. 109. How came you to see it there?

Ans. By working there, and seeing it laying around part of the mill.

Cross-Q. 110. Had it been used in the mill?

Ans. That I don't know.

Cross-Q. 111. Was it there when you went there to the mill, or was it brought there afterwards?

Ans. It was there when I went there.

Adjourned until January 2, 1883, at 10, A. M.

JANUARY 2, 1883, 10 A. M.

Examination resumed, pursuant to adjournment.

Present same counsel.

Cross-examination of Jacob Evans, by Mr. Hill, continued.

Witness states that he desires to make a correction, and proceeds as follows:

I wish to recall that statement about the diamond burr-dressing machine. I studied over it last night, and I find it to be a tram instead of a diamond burr-dresser.

Cross-Q. 112. Have you talked with anybody about it since the adjournment last night? If so, with whom?

Ans. No, sir; not until this morning, and then I brought a letter into Mr. Storrow's room for Mr. Comfort, and he put the question to

me. I told him then that I had studied over it last night, and that it was a tram instead of a burr dresser, and asked him whether I had a right to recall it.

Cross-Q. 113. I now ask you again whether you had any knowledge of diamond burr-dressing machines there at the shop?

Ans. Not that I remember.

Cross-Q. 114. You have testified that Mr. Drawbaugh's girls were always nicely dressed. How many girls had he, and what were their ages when you went to Eberly's Mills to live?

Ans. Yes, sir; I had testified generally; there were four girls; their ages I do not know.

Cross-Q. 115. What were their names?

Ans. Laura, Olie, Birdie, and Maud.

Cross-Q. 116. Did you ever see any of those girls with a silk dress on?

Ans. No, sir.

Cross-Q. 117. Did you ever see them with any watches or jewelry on?

Ans. Not that I can remember.

Cross-Q. 118. You meant that they dressed comfortably on ordinary plain clothes then, did you?

Ans. Yes, sir; I meant that they dressed comfortably and respectable enough to go into any society.

Cross-Q. 119. Weren't their dresses made at home by their mother and themselves?

Ans. I don't know anything about that.

Cross-Q. 120. You have testified that you married a daughter of Mr. Ditlow; when did Mr. Ditlow die?

Ans. The fore part of 1873.

Cross-Q. 121. When Mr. Drawbaugh lived in the house now occupied by Daniel Fettrow, where did you live while you lived at Milltown?

Ans. In Leonard's house, opposite Daniel Drawbaugh.

Cross-Q. 122. Mr. Drawbaugh moved away from that house about the 1st of April, 1876; did he not?

Ans. Yes, sir.

Cross-Q. 123. He never lived in that house afterwards; did he?

Ans. No, sir.

Cross-Q. 124. Do you know the age of his youngest child, Maud?

Ans. No, sir.

Cross-Q. 125. She was born before he moved away from the house where Fettrow lives; was she not?

Ans. I don't remember; but I most think she was.

Cross-Q. 126. You have testified that you heard people talking about Mr. Drawbaugh's talking-machines or telephones in 1877; are you sure that you did not hear of those talking-machines or telephones a good deal prior to 1877?

Ans. Not that I can remember; I did not.

Cross-Q. 127. Are you prepared to swear that you did not hear of those talking-machines long prior to that time, and have forgotten?

Ans. No, sir.

Cross-Q. 128. How many children have you and what are their ages; and if you have lost, any give their names and the time of their birth?

Ans. I have one living now at the present time, six years old the eighteenth of this month, and one dead born in June, 1875; the one living is George F. Evans, and the one dead was Samuel O. Evans.

Cross-Q. 129. When did your son Samuel die?

Ans. June, 1875.

Cross-Q. 130. How many times has Mr. Comfort been to see you on behalf of complainants to talk about your knowledge of this case?

Ans. Once.

Cross-Q. 131. When was that?

Ans. During the fore part of 1882.

Cross-Q. 132. Hasn't he been at your house more recently than that?

Ans. No.

Cross-Q. 133. Has anybody else been to see you since that on behalf of complaintants; if so, who?

Ans. No, sir.

Redirect by Mr. Smith:

Q. Q. 134. Did any one come with Mr. Comfort when he came to see you; if so, who was it?

Ans. Yes, sir; Mr. Storrow.

Examination taken, reduced to writing, and by the witness affirmed and subscribed to before me this 2d day of January, 1883.

FRED. M. OTT,
Examiner.

JACOB EVANS.

ORLANDO KAHNEY, *being produced, affirmed, and examined, saith:*

Examined by Mr. Storrow:

My age is thirty; residence, Triumph, La Salle county, Illinois; occupation, farming.

Q. 1. Did you formerly live at or near Milltown, Cumberland county, Penna?

Ans. Yes, sir.

Q. 2. When did you leave there, and move to the west?

Ans. In 1879, the first of April.

Q. 3. When did your family first move to Milltown, and whom did you work for the first season that your family lived there?

Ans. They moved there in 1871, and I worked for Henry Mosser.

Q. 4. Will you name the different people you worked for successive summers or years that you lived in or near Milltown?

Ans. Samuel Bowman; I lived there one year; Wils. Walters, three years; William Sadler, a year; Jacob Reneker, over two months; I worked for Jacob Bates the latter part of that season; I worked for William Sadler the next season; then I left for the west.

Q. 5. According to that account then you worked for Mosser in 1871, Bowman in 1872, Walters in 1873, '4 and '5, Sadler in 1876; for Reneker and Bates in 1877; and for Sadler in 1878, and up to the time you left for the west in 1879; is that the fact?

Ans. Yes, sir.

Q. 6. During the time between when your family first moved to Milltown in 1871 and the time you moved west in 1879, did your family—by which I suppose you mean your father's family—always live in the same house; and if not, what houses did they live in?

Ans. They did not; they lived at Milltown, in Leonard's house, and they lived in Martin Best's house, and the spring that I left they moved to White Hill into Michael Bolissy's house.

Q. 7. How far from the grist-mill, in Milltown, was Martin Best's house that they lived in?

Ans. About a half a mile.

Q. 8. When did you first become acquainted with Mr. Daniel Drawbaugh?

Ans. I don't know.

Q. 9. Did you know him before your family went to live in Milltown?

Ans. No, sir; I didn't.

Q. 10. About how soon after your family went to live in Milltown did you become acquainted with him?

Ans. About the second winter.

Q. 11. Between the time when you quit work for William Walters, in 1875, and the time when you went to work for William Sadler, in 1876, where did you live?

Ans. I lived at home.

Q. 12. In which house?

Ans. In Martin Best's house.

Q. 13. Between the time when you worked for Sadler, in 1876, and the time when you went to work for Reneker, in 1877; that is, the winter between the two, where did you live?

Ans. I lived to home.

Q. 14. Between the fall of 1877 and the spring of 1878, when you went to work for William Sadler; where did you live during that winter?

Ans. I lived to home part of the winter and part of the time with Abraham Coble, boarding with him.

Q. 15. During which part of the winter did you live with Abraham Coble, the fore part or the latter part; and what led you to go and board there part of the time instead of living at home?

Ans. I boarded there the latter part of the winter; we couldn't agree at home.

Q. 16. Were you doing any work up near Mr. Coble's the latter part of that winter?

Ans. Yes, sir.

Q. 17. What was it, and whom for?

Ans. I was quarrying stone for William Sherbone.

Q. 18. Do you remember Mr. Drawbaugh's moving up from Milltown to Mechanicsburg, in the spring of 1876, and moving back again to Milltown in the spring of 1877, and did you help move him at either or both of those times?

Ans. Yes, sir; I moved him both times.

Q. 19. What teams did he have going up?

Ans. He had Mr. Sheeley's team, Mr. Rennard's, William Sadler's; and Mr. Leonard's wagon was along. I don't remember whether it was a two-horse or a one-horse wagon.

Q. 20. How many horses were there in each of the other teams?

Ans. They were four-horse teams.

Q. 21. Did any of those teams make two trips, if you remember?

Ans. Not that I remember.

Q. 22. What teams hauled him down?

Ans. Jacob Reneker, Cal. Rowe, and I think Sheely hauled him; I am not positive about that.

Q. 23. Did Sadler or Leonard have a team to help haul him down?

Ans. Sadler did; I won't say for Leonard.

Q. 24. How many horses did each of these teams have?

Ans. Reneker's team had six horses; Cal. Rowe's had two, I think; I am not quite sure how many he did have; the other two had four-horse teams.

Q. 25. Did you help carry out the furniture and load the teams on those movings?

Ans. Yes, sir.

Q. 26. Had you been in the habit of calling at his house some in Milltown before he moved away in 1876, or after he moved back in 1877?

[*Objected to by Mr. Hill, as leading, the word "habit" being put into the witness' mouth by the question.*]

Ans. I only remember of calling to his house twice before he moved away. I was there quite frequently after he moved back.

Q. 27. Was or was not his house as well furnished as the generality of houses in that neighborhood?

Ans. Yes, sir; I thought it was.

Q. 28. Did they have a carpet on the parlor?

Ans. Yes, sir.

Q. 29. Do you know whether it was a bought carpet or a rag carpet?

Ans. I do not.

Q. 30. Did they have a parlor organ?

Ans. They had an organ in; yes, sir.

Q. 31. Did they have a base-burner stove?

Ans. Yes, sir.

Q. 32. How did the daughters and children of the family compare in dress with the generality of their neighbors?

Ans. I thought they were dressed about the same as the rest of the folks around Milltown.

Recess for lunch until half-past two, P. M.

JANUARY 2, 1883, 2.30, P. M.

Examination resumed pursuant to adjournment.

Present, same counsel.

Examination of Orlando Kahney, by Mr. Storrow, continued:

Q. 33. Did you know anything about a sale of a secretary by Mr. Drawbaugh to Mr. Reneker in the spring of 1877, at the time when you and others moved Mr. Drawbaugh down from Mechanicsburg to Milltown; and did you hear Mr. Drawbaugh and Mr. Reneker negotiating about it?

Ans. Yes, sir.

Q. 34. Did Mr. Drawbaugh have two secretaries at that time among his furniture, or did he only have one?

Ans. He had two, he said, and didn't need but one.

Q. 35. This secretary that he sold to Reneker, was it one that he had bought at a store, or one that he had made himself?

Ans.. I think he said he had made that one himself.

Q. 36. Did you know a man by the name of Wesley Smith, a rather small fellow, who lived at Milltown a few months at one time, and did a few odd jobs of printing; and did you afterwards see him around in Milltown, with a pack on his back, peddling?

Ans. I wasn't acquainted with the gentleman at all, but seen him in Milltown, and was told that it was him.

Q. 37. Did you see him when he lived there, or when he was peddling there?

Ans. When he was peddling.

Q. 38. It appears from your testimony, that you quit working for Mr. Wilson Walters in 1875, and went to work for Mr. Sadler in 1876; can you tell me about what time in 1875 it was that you quit working for Mr. Walters, and what time in 1876 it was that you began working for Mr. Sadler?

Ans. It was in July, 1875, that I quit work for Wilson Walters; I began working for Mr. Sadler about the middle of May, 1876.

Q. 39. Where did you live during this interval between July, 1875, and May, 1876?

Ans. At home.

Q. 40. During the other years, were you or were you not in the habit of being at home considerably during the winters?

Ans. Yes, sir.

Q. 41. When you were at home and not regularly at work, while

your family lived in or near Milltown, what places were you in the habit of going to, to while away your time and talk? Name some of them.

Ans. I would go to Mr. Drawbaugh's machine shop and to the store in Milltown and to the mill-office.

Q. 42. Were you apt to meet some of the other young men of the village at some of these places?

Ans. Yes, sir.

Q. 43. Give me some idea of how often you used to go to Mr. Drawbaugh's shop, while you were at home.

Ans. When I had nothing to do I would go down to Milltown every day, and I would almost always go to the shop; there was no place else to go, hardly.

Q. 44. Did you talk much to Mr. Drawbaugh when you would go there, and were you and he, or not, in the habit of having long conversations together?

Ans. Yes, sir; we would talk a good bit when I was there.

Q. 45. While you lived at Mr. Sadler's in 1876, did you go to the Centennial?

Ans. Yes, sir.

Q. 46. Please to tell me when it was; and if you can fix the date by the hotel register here present you may do so.

Ans. Tuesday, October 31, 1876.

Q. 47. Is that your signature?

[*Showing witness register of Washington Hotel, Philadelphia, at page for Tuesday, October* 31, 1876, *which bears the name of Orlando Kahney, as having arrived on that day in time for dinner.*]

Ans. Yes, sir; I wrote that.

Q. 48. Do you remember when it was that you first heard that Mr Daniel Drawbaugh was at work on the talking-machine, and whom you heard it from?

Ans. It was a short time after I came back from the Centennial; Mr. Drawbaugh told me himself.

Q. 49. Where were you and he at the time when he told you this?

Ans. In his machine shop.

Q. 50. Tell me the circumstances that led you to go down to the shop on that occasion, and what day of the week it was.

Ans. I was at Milltown and went down to the creek to take a boat-ride with Miss Laura Drawbaugh and Miss Glo. Hauck; and we went out

on the Yellow Breeches in the boat, and came back again and went up to Milltown again; then I went to the machine-shop; it was on Sunday.

Q. 51. Tell me something of what Mr. Drawbaugh said to you on that occasion about his working on a talking-machine.

Ans. He said that he had been working on something that would make him an independent fortune, and I asked him what it was; he said it was a talking-machine, and I asked him if he had it patented; he said that he hadn't, that he didn't have the money to get it patented with.

Q. 52. Did he show you any talking-machine at that time?

Ans. No, sir.

Q. 53. Did he tell you at that time what kind of a thing the talking-machine was, or how it worked?

Ans. Not at that time he didn't.

Q. 54. Did he ever afterwards ask you to listen at his shop by putting one instrument to your ear while he talked into another?

Ans. Yes, sir.

Q. 55. What room in his shop were you in when you put this instrument to your ear?

Ans. I was in the north-west corner room of the shop.

Q. 56. Was it in one of the work-rooms or in his office-room?

Ans. It was in his office-room.

Q. 57. While he was speaking into one instrument and you were listening at the other, were you and he in the same room, or in different rooms?

Ans. He was in the same room.

Q. 58. Did you hear and understand what he said?

Ans. I didn't understand; I don't remember if I understood it; I heard him speak through the machine—I could hear him speak.

Q. 59. Whom were you working for at that time, and what had led you to go to the shop on that particular occasion?

Ans. I was going to commence to quarry stone, and I went to Mr. Drawbaugh to borrow a sledge of him; I was going to work for William Sherbone—I hadn't commenced yet.

Q. 60. Was that the stone quarrying job that you testified in your 17th and other answers that you were doing at the beginning of 1878?

Ans. Yes, sir.

Q. 61. When Mr. Drawbaugh spoke to you about working on a talking-machine, soon after you came back from the Centennial, did he say anything to you about saying anything to other people about it?

Ans. He said I wasn't to say anything to anyone about it.

Q. 62. It appears from the register that you arrived at Philadelphia for the Centennial on Tuesday, the 31st of October; on what day did you go home, if you remember?

Ans. I think that I went home on Thursday night following.

Q. 63. Was there any special thing that hurried you home?

Ans. Yes, sir; Mr. Sadler wanted to thresh.

Q. 64. Have you any recollection or impression on your mind whether it was the first Sunday, or second Sunday, or third Sunday, or how many Sundays after you got home, that you went to Mr. Drawbaugh's shop, and heard from him that he was at work on a talking machine, as you have testified?

Ans. I thought it was the second Sunday.

Q. 65. Will you mention some of the machines of Mr. Drawbaugh's getting up, which you remember to have heard of or seen at his shop?

Ans. A magnetic clock, a weather-guage, a paper-sack folder, faucets —that is all.

Q. 66. Do you remember of his having a nail machine?

Ans. Yes, sir.

Q. 67. Did you ever see a dial telegraph there—I mean a telegraph made with a dial, with letters around it, and a pointer?

Ans. Yes, sir.

Q. 68. Do you know whether Mr. Drawbaugh got that up or not?

Ans. I do not.

Q. 69. Did you ever know of a machine there to wrap wire—wind thread around wire?

Ans. Yes, sir.

Q. 70. Which of Mr. Drawbaugh's various things did you hear the most talk about?

Ans. The clock.

Q. 71. Did you ever hear that he had, or expected to have, a Mechanicsburg man in partnership with him about it and; if so, who?

Ans. Yes, sir; Mr. Shapley.

Q. 72. Did he ever take his clock to Mechanicsburg?

Ans. Yes, sir.

Q. 73. You have described the occasion when you went to Mr. Drawbaugh's shop for a sledge-hammer, and you listened by putting one instrument to your ear while he talked into another; had you ever listened to a talking-machine at his shop before that?

Ans. No, sir.

Q. 74. Had he ever before that shown you an instrument and told you it was a talking-machine?

Ans. Not that I recollect of.

Q. 75. I show you two instruments, "F" and "B," telling you also that the glass tumbler "F" had its inside nearly all coated with white plaster-of-paris, when it was first produced, and that the tin can "B" had its inside also pretty well coated with white plaster of paris, when it was first produced. Did you ever see at Mr. Drawbaugh's shop anything like either of these two instruments, or like any part of them; and if so, what?

Ans. I seen both those two instruments in Daniel Drawbaugh's shop.

Q. 76. Describe the condition of the tumbler instrument when you saw it in Drawbaugh's shop; I mean particularly whether its top was covered, and what it appeared to you to be covered with.

Ans. It was a tumbler that was coated with white and was covered with what I thought was brown paper with a kind of a glaze over it; that is what I took it to be.

Q. 77. Did it have, when you saw it, a wooden cap-piece on it, such as is on it now?

Ans. No, sir.

Q. 78. Did you know what it was when you saw it?

Ans. No, sir.

Q. 79. Did you ever know what it was, until an instrument like it was shown to you within the past year?

Ans. No, sir.

Q. 80. Did you know what the tin can instrument "B" was, when you saw it at Mr. Drawbaugh's shop?

Ans. No, sir.

Q. 81. Did you ever know what it was for, until an instrument like it was shown to you within the past year?

Ans. No, sir.

Q. 82. In what part of Mr. Drawbaugh's shop did you see the instruments "F" and "B," as you have described them?

Ans. In the office part.

Q. 83. Was it before or after the time you first heard that he was at work on a talking machine, as you have stated?

Ans. I don't remember whether it was before or after.

Adjourned until January 3, 1883, at 10, A. M.

JANUARY 3, 1883—10, A. M.

Examination resumed, pursuant to adjournment.

Present, same counsel.

Examination of Orlando Kahney, by Mr. Storrow, continued:

Q. 84. Please tell me whether you ever saw at Mr. Drawbaugh's shop an instrument which resembled instrument "A," now shown you?

Ans. Yes, sir.

Q. 85. Did you know what it was for when you saw it?

Ans. No, sir.

Q. 86. Do you remember whether you saw that instrument before Mr. Drawbaugh's first conversation with you about the talking machine in the fall of 1876, or after that conversation?

Ans. I don't remember.

Q. 87. Please to give such description as you can of the instrument which you took in your hand and held to your ear at the time Mr. Drawbaugh talked to you when you went for the sledge at the beginning of 1878?

Ans. It was a dark-colored piece of wood and had a mouth piece on—round.

Q. 88. Please look at the instruments now shown you "I," "D," "E," "L," "M," "N," "Q," and tell me whether you can identify any of them as the instrument which you held in your hand and placed to your ear on that occasion?

Ans. I don't remember any of those.

Q. 89. Do you think that the instrument that you held in your hand and placed to your ear on that occasion was as big as this instrument "I"?

Ans. I don't have any recollection of the instrument that I did put to my ear.

Q. 90. Look at the instruments now shown you marked "H," "J," "C," "C reproduced," "P," "G," "O," and "I," "D," "E," "L," "M," "N," "Q;" can you identify any of these instruments as instruments, which you saw at Mr. Drawbaugh's shop?

Ans. I remember seeing a box there with a bell on; I don't know if that is the box, (indicating "H,)" or not; I don't recognize any of the rest at all.

Q. 91. When you saw the box with a bell on it, whereabouts was it?

Ans. It was in his office sitting on a bench.

Q. 92. What did you think it was for when you saw it?

Ans. I thought it was some part of a clock that he was fixing.

Q. 93. At the time when you went to Mr. Drawbaugh's shop, and he first spoke to you about a talking-machine, as you have testified, what work were you engaged on at that time?

Ans. Husking corn.

Q. 94. Whom for?

Ans. William Sadler.

Q. 95. Do you remember any of the matters that you and Mr. Drawbaugh talked about on that visit, besides what he said about the talking-machine?

Ans. Yes, sir.

Q. 96. Mention some of them.

Ans. We talked about the machinery and other things that were at the Centennial.

Cross-examined by Mr. Hill:

Cross-Q 97. When, and by whom were you first conversed with, on the part of the complainants, about your knowledge of this case?

Ans. Mr. Comfort, about the middle of June last, at my home in Illinois.

Cross-Q. 98. You have referred to an interview between yourself and Mr. Drawbaugh, at his shop, on a Sunday, when you first heard of his telephone or talking-machine, so far as you remember; are you entirely positive that that interview was on Sunday?

Ans. It was Sunday; yes, sir.

Cross-Q. 99. What time of day was it, so far as you remember?

Ans. It was in the afternoon.

Cross-Q. 100. What kind of a day was it—pleasant and warm and sunny, or cold or cloudy?

Ans. I don't remember how the day was, but I think it was a pleasant day.

Cross-Q. 101. Was it before the winter weather set in that year?

Ans. Yes, sir.

Cross-Q. 102. Would you say it was before the first of December?

Ans. Yes, sir.

Cross-Q. 103. De you feel entirely confident of that?

Ans. Yes, sir.

Cross-Q. 104. How long was your boat ride before your visit to Drawbaugh's shop, that day?

Ans. We took a very short boat ride. It was that day. We walked

up to Milltown, after the boat ride, and I went right to the shop again from the house.

Cross-Q. 105. From whose house did you go right to the shop?

Ans. From Mr. Drawbaugh's house.

Cross-Q. 106. Mr. Daniel Drawbaugh's house?

Ans. Yes, sir.

Cross-Q. 107. Did you leave the ladies at his house?

Ans. Yes, sir.

Cross-Q. 108. Did you go into his house when you arrived there with the ladies from the boat ride?

Ans. Yes, sir.

Cross-Q. 109. How long did you remain in the house?

Ans. Only a few minutes.

Cross-Q. 110. Whom did you see in the house?

Ans. I seen Mrs. Drawbaugh; I think she was alone that day. I was studying to think whether I seen any of the children, but I think Mr. Drawbaugh's wife was alone that day.

Cross-Q. 111. Did you see the parlor organ, the carpet, and the base burning stove at that time?

Ans. I don't remember if I did.

Cross-Q. 112. When you went to take the ladies out on the boat ride, where did you meet them, and from what place did you go to the boat?

Ans. I don't remember where I did meet them.

Cross-Q. 113. When you were at Mr. Drawbaugh's house, after returning from the boat ride, did you inquire of Mrs. Drawbaugh for her husband, and did she tell you that he was at the shop?

Ans. No, sir.

Cross-Q. 114. In what house was Mr. Drawbaugh living at that time?

Ans. In the plastered house across from the mill.

Cross-Q. 115. Who occupied that house before and after he did?

Ans. I think there was some of the railroaders lived in there the year before; I don't remember who lived there after he did.

Cross-Q. 116. Do you know to whom the house belonged?

Ans. Mr. Leonard.

Cross-Q. 117. Were there any other families living in the house at that time, or only Mr. Drawbaugh's family?

Ans. I don't remember of any one else living in it.

Cross-Q. 118. Was that the house from which you moved Mr. Draw-

baugh's effects to Mechanicsburg, or the house to which you moved them from Mechanicsburg?

Ans. To which we removed them from Mechanicsburg.

Cross-Q. 119. Was that boat-ride before or after you moved him from Mechanicsburg to Milltown?

Ans. It was after.

Cross-Q. 120. Then instead of being in the fall of 1876, that boat-ride was after the 1st of April, 1877; was it not?

Ans. Yes, sir.

Cross-Q. 121. Now, with your memory refreshed and corrected, will you tell me whether that boat ride occurred while you were husking for William Sadler?

Ans. Yes, sir; it did.

Cress-Q. 122. Please give me now your best recollection as to the time when the boat ride did occur.

Ans. It was about the middle of the corn husking of 1877 I should say.

Cross-Q. 123. Was that the year that you worked for William Sadler, instead of 1876?

Ans. I worked for William Sadler in 1876; I hayed, and harvested, and husked corn for him in 1877, and worked for him in 1878 again.

Cross-Q. 124. As this last answer seems to be inconsistent with your 4th and 5th answers, will you please read your 4th and 5th answers and make any corrections in them which will show the facts accurately?

Ans. I worked for Jacob Reneker in the spring of 1877 about two months; went to William Sadler's and hayed and harvested through haymaking and harvest; then went to Jacob Bates' and worked until corn cutting time; then husked corn for William Sadler.

Cross-Q. 125. You have referred to a conversation which you had with Mr. Drawbaugh at his shop soon after the Centennial, in which the machinery exhibited at the Centennial was talked about; do you now remember that as another and different conversation from the one which took place on the day of the boat ride?

Ans. I don't remember of it at any other time.

Cross-Q. 126. You have testified that you are confident that a conversation occurred between you and Mr. Drawbaugh at his shop on a Sunday after your return from the Centennial, and that you are entirely confident that it was before the first day of December; you have since testified that the boat ride was in the fall of 1877; you have also testi-

fied that you had a conversation with Mr. Drawbaugh at his shop on the day of the boat ride; what I now wish to know is, whether, in so testifying, you referred to two distinct conversations or only one? and if only one, then I want to know whether that one took place immediately after the Centennial, or on the day of the boat ride?

Ans. I remember only of one; it was one the day of the boat ride, I think; I wont say positively.

Cross-Q. 127. You have mentioned a Miss Hauck as one of the persons who went with you on the boat ride; will you give her name in full and tell where she lived at that time and whose daughter she was?

Ans. I can only give her name as Glo. Hauck; it was the blacksmith Hauck; I don't know his name; he used to blacksmith there in Milltown and lived on the other side of the river then; I don't know what place he lived at.

Cross-Q. 128. Was her name Glora Hauck, and was her father's name Elisha T. Hauck?

Ans. Indeed, I couldn't tell you; all I ever knew was Glo. Hauck; I don't remember of ever hearing her father's given name.

Cross-Q. 129. Is her father living, and do you know where?

Ans. I do not know.

Cross-Q. 130. Is William Sadler living?

Ans. Yes, sir; he was the last I heard from him.

Cross-Q. 131. Tell me the names of Mr. William Sadler's family.

Ans. Jacob Sadler, Meta Sadler, Laura Sadler, Alice Sadler, Emma Sadler, Effa Sadler, and Mrs. Saddler; I think her name was Mary; I ain't positive, though.

Recess for lunch, until half past two, P. M.

JANUARY 3, 1883, 2.30, P. M.

Examination resumed, pursuant to adjournment.

Present, same counsel.

Cross-examination of Orlando Kahney, by Mr. Hill, continued:

Cross-Q. 132. When you worked for Mr. Sadler, where did you board?

Ans. I boarded with Mr. Sadler.

Cross-Q. 133. When you first worked for him, did he live where he does now?

Ans. No, sir; he lives in Camp Hill now; he sold his farm.

Cross-Q. 134. When did he sell his farm?

Ans. During the time that I had been in the west.

Cross-Q. 135. How far was his farm from Drawbaugh's shop at Milltown, and in what direction?

Ans. About three miles I would suppose; it was towards Oyster's Point; Sadler lived in East Pennsboro township; the farm was about north-west from the shop.

Cross-Q. 136. When you worked for Mr. Sadler in 1876, were his children all at home?

Ans. Yes, sir; with the exception of Jacob; he was away part of the time.

Cross-Q. 137. Were you pretty well acquainted with Jacob Sadler?

Ans. Yes, sir.

Cross-Q. 138. Do you remember of ever talking with him about Mr. Drawbaugh's inventions?

Ans. I do not.

Cross-Q. 139. Do you remember of ever talking with any of Mr. Sadler's family, or hearing them talk about Mr. Drawbaugh's inventions?

Ans. No, sir.

Cross-Q. 140. Give the full name of the Mr. Bates for whom you worked in 1877, and tell where he lived, and how far it was from Drawbaugh's shop.

Ans. Jacob Bates; he lived in George Sherbone's farm, the next farm to William Sadler's; I suppose it would be about three miles.

Cross-Q. 141. Where did Jacob Reneker live, and how far from Drawbaugh's shop?

Ans. He lived down on the place that Ditlow used to live on; I suppose it was about half a mile or three quarters from the shop.

Cross-Q. 142. Where did Wils. Walters live, and how far from Drawbough's shop?

Ans. He lived on Simon Oyster's farm. I suppose it must be four or five miles, maybe more, from Drawbaugh's shop.

Cross-Q. 143. Where did Samuel Bowman live, and how far from Drawbaugh's shop?

Ans. He lived on the Widow May's farm, about between five or six miles, or something like that, from Drawbaugh's shop.

Cross-Q. 144. Where did Henry Mosser live, and how far from Drawbaugh's shop?

Ans. He lived on his own place, about three miles from Drawbaugh's shop.

Cross-Q. 145. How long did your father's family live in Martin Best's house?

Ans. Four years, I think.

Cross-Q. 146. Is not Martin Best's house nearer a mile from the grist mill at Milltown than a half mile?

Ans. I don't know exactly; it may be over a half mile; I wouldn't say positively.

Cross-Q. 147. In what direction is it from the grist mill at Milltown?

Ans. I think it is south-west.

Cross-Q. 148. How far is it from Shiremanstown?

Ans. About two or three miles.

Cross-Q. 149. What did you do the first year that your father's family lived in Martin Best's house?

Ans. I worked for Wils. Walters part of the season.

Cross-Q. 150. Give us an account of all that you did during that first year that your father's family lived in Best's house.

Ans. I worked for Wils. Walters the first part of the season until July, 1875; from Wils. Walters I went to Fairview; from there I came home and worked day's work from that on.

Cross-Q. 151. What did you do at Fairview that season?

Ans. I worked in the puddling-mill.

Cross-Q. 152. For whom?

Ans. I can't think of the man's name I worked for; I worked in McCormick's mill, though. I want to recall from where I left Wils. Walters'; I made a mistake there; I worked for Wils. Walters in the year 1875 till some time in July, and went home and worked at cutting and husking corn during that fall.

Cross-Q. 153. When did you work at McCormick's mill at Fairview?

Ans. In 1874; it was just the year before I left.

Cross-Q. 154. What do you mean by the year before you left?

Ans. Before I came away from Walters' and stayed away in 1875.

Cross-Q. 155. Did you ever work at the Fairview puddling-mill except that once?

Ans. No, sir.

Cross-Q. 156. How long did you work there, and what season of the year was it?

Ans. I worked there about six or seven days; it was about the beginning of August, or some time along there, I guess.

Cross-Q. 157. Give us your history for the whole year of 1874—where you were, and what you did, and for whom, and how long.

Ans. The forepart of the summer I was with Wils. Walters; I left him and went to Fairview iron works; came back, and went to work for Wils. Walters again; worked for him up to about August, 1875; I am not positive about the date.

Cross-Q. 158. Give us your history for the year 1873, in the same manner.

Ans. I worked for Wilson Walters in 1873—from about November or December, 1872—and worked on until 1875, right along, the whole time, working in the summer season, and making my home there for the most part all the time. I would go away sometimes for a week or so at a time; I was just doing the feeding for my board, in winter.

Cross-Q. 159. Give us your history for the year 1872, in like manner.

Ans. I worked for Samuel Bowman, in 1872, from March on up to the time when I went to Wilson Walters'.

Cross-Q. 160. Did you make your home in Mr. Bowman's family while you worked for him?

Ans. Yes, sir.

Cross-Q. 161. Where were you from the beginning of 1872, until you went to work for Mr. Bowman?

Ans. I was to home.

Cross-Q. 162. Give me your history for the year 1871, in like manner.

Ans. I worked for Henry Mosser, in 1871.

Cross-Q. 163. From what time to what time, in 1871?

Ans. I don't remember when I commenced or what time I quit there.

Cross-Q. 164. After you quit work for Wilson Walters, about August, 1875, what did you do, and where were you in the fall, winter, and spring following?

Ans. I was to home. I worked around on farms in the fall and winter, and worked some on the Harrisburg and Potomac railroad, the new railroad there, in the spring.

Cross-Q. 165. What kind of work did you do on the Harrisburg and Potomac railroad?

Ans. Picked some and shoveled some.

Cross-Q. 166. In whose gang did you work, and who paid you, and who worked with you?

Ans. I worked in Jacob Frederick's gang; he paid me; George Frederick worked with us for one; John Nolan, I think, was one; John Hennesey was another; I don't remember of any one else working there; there was quite a number of others there, though.

Cross-Q. 167. Did you work there up to the time when you began to work for Mr. Sadler?

Ans. Yes, sir.

Cross-Q. 168. Where were you, and what were you doing in the fall of the Centennial year after corn-husking, and in the winter and spring following?

Ans. I was to home that winter, and in the spring I went to Jacob Renneker's to work; I wasn't doing much of anything; once in a while I would do a day's threshing.

Cross-Q. 169. That was the first winter that you had really loafed about home since the winter before you went to work for Walters; was it not?

Ans. The first winter that I was there all the winter; yes, sir.

Cross-Q. 170. Have you any recollection of the circumstance of your introduction to Daniel Drawbaugh, or first making his acquaintance?

Ans. I made his acquaintance, I guess first in 1870.

Cross-Q. 171. Did you make his acquaintance while the old faucet company were working at his shop, or do you remember anything about their working at his shop?

Ans. I don't remember whether they were making faucets there at that time or not. William Sadler and I went down there the first time I ever met him to know who he was.

Cross-Q. 172. Was that before or after your family moved to Milltown?

Ans. Before.

Cross-Q. 173. Then, when you testified in your examination-in-chief that you didn't know Daniel Drawbaugh before your family went to live in Milltown, but became acquainted with him about the second winter after they went to live there, you were in error in regard to the time of your first acquaintance with him; were you not?

Ans. Yes, sir.

Cross-Q. 174. Were you ever in Drawbaugh's shop while the Haucks were carrying on the faucet business there?

Ans. I was there when they were making faucets there. I did not know who were making them—not at the time.

Cross-Q. 175. Do you know what year that was?

Ans. I don't remember right what year it was; I think it was 1869 or 1870—somewhere along there. I was there different times and saw them making faucets, and don't remember when it was.

Cross-Q. 176. Did you ever hear about the Haucks having bought out the faucet company, and gone into the business making faucets there?

Ans. I don't remember of ever hearing it.

Cross-Q. 177. You have stated, that in the winter following the fall of 1875, you were living at home and working around among the farmers; have you any recollection of being in Drawbaugh's shop that fall, winter, or spring, following your quitting work for Walters?

Ans. Yes, sir; I was there quite a number of times.

Cross-Q. 178. In the fall or winter or spring?

Ans. I would be there fall, winter, and spring, I suppose both, for when I had nothing to do I would be in Milltown and would go to the shop to see him work and talk to him.

Cross-Q. 179. What was going on in Drawbaugh's shop that fall, winter, and spring, that you remember?

Ans. I think they were making those patent axles, and I think they made them things for to go on sewing machines—I forget what you call them.

Cross-Q. 180. If you have any idea when they began to make those things there, please state it?

Ans. I did at the time; I don't remember now when it was they commenced.

Cross-Q. 181. Whom did you see working there in Drawbaugh's shop the fall, winter, and spring after you left Walter's?

Ans. I seen Hiram Drawbaugh work there, George Drawbaugh; that is all I guess I remember seeing work there with the exception of Daniel Drawbaugh; I seen him working there.

Cross-Q. 182. Who was carrying on the axle business there?

Ans. Captain Moore, Michael Grove, Wilson Bear, and, I think, Jacob Kline.

Cross-Q. 183. Whom were Hiram Drawbaugh and George Drawbaugh working for there that fall, winter, and spring?

Ans. I don't know; I suppose they were working for the firm, though.

Cross-Q. 184. In what part of the shop were they working?

Ans. They were working up-stairs.

Cross-Q. 185. Do you mean on the second floor?

Ans. It was on the second floor, not counting the basement as a floor.

Cross-Q. 186. What was going on on the first floor at that time?

Ans. I don't remember.

Cross-Q. 187. Do you remember seeing anybody at work on the first floor at that time?

Ans. Yes, sir.

Cross-Q. 188. Whom?

Ans. Hiram Drawbaugh.

Cross-Q. 189. You saw him working on both floors, did you?

Ans. Yes, sir.

Cross-Q. 190. Have you any recollection what you saw him doing there at any time that season?

Ans. Yes, sir.

Cross-Q. 191. State all you remember of seeing him doing at that time.

Ans. I seen him turn up those axles; I don't remember anything else.

Cross-Q. 192. What did you see George Drawbaugh doing there at that time?

Ans. I don't remember, but I think he was turning up axles, too.

Cross-Q. 193. On the second floor or the first floor?

Ans. On the second floor.

Cross-Q. 194. Wasn't he turning something of wood instead of iron?

Ans. I don't remember of him being turning wood.

Cross-Q. 195. On what part of the floor was the lathe that you saw him working on and in what room?

Ans. I don't remember right where the lathe was that he was working on; I think, though, it was at the south side of the shop; I won't be positive it was on the second floor.

Cross-Q. 196. Was it in the large room or one of the small rooms on that floor?

Ans. In the large room.

Cross-Q. 197. Where was Daniel Drawbaugh at work at that time; I mean that fall, winter and spring when you saw him working?

Ans. He mostly worked in the little room there.

Cross-Q. 198. What little room?

Ans. In the corner of the shop up towards Milltown, and at the side

where the stream comes down from the mill—the north-west corner of the shop, I believe; I am a little mixed about the points of the compass.

Cross-Q. 199. What did you see him working at there at that time?

Ans. I seen him work at different kinds of work there.

Cross-Q. 200. Mention all the different kinds that you now remember.

Ans. I think I seen him work on that clock at that time—that electric clock.

Adjourned until January 4, 1883, at ten, A. M.

JANUARY 4, 1883, 10, A. M.

Examination resumed pursuant to adjournment.

Present, Mr. Smith for complainants, and Mr. Hill for respondents.

Cross-examination of Orlando Kahney, by Mr. Hill, continued:

Cross-Q. 201. While answering the last question yesterday you were obliged to stop suddenly on account of getting something into your eye; and I had the impression that you left your answer unfinished; the examiner will please read the last question and answer to you, and if your answer was left unfinished, you will please complete it.

Ans. I don't remember of anything else, but I know that he worked at different kinds of work.

Cross-Q. 202. It is true, then, is it not, that you know that Mr. Drawbaugh worked on different kinds of work in that little room during the fall of 1875, and the winter and spring following, but you do not know what he was working at except the clock?

Ans. Yes, sir.

Cross-Q. 203. For all you know, then, he may have been working at talking-machines during that time, or parts of that time, may he not?

Ans. He may have been working at it, but it is strange that I wouldn't know or hear anything about it.

Cross-Q. 204. Do you think you would have heard about it as soon as he began to work on talking-machines?

[*Counsel for complainants inquires whether the respondents' counsel wishes the witness to understand or to have the impression that the work on talking machines was commenced during the period as to which he is interrogating the witness, or during the time when witness was visiting the shop.*

Respondents' counsel replies that he does not, nor did it occur to him that any such inference could be drawn from the question, which question is based entirely upon the remark made by the witness in the last answer.]

Ans. I don't think I would have heard of it as soon as he commenced to work on it, but I think I would have heard something about it before he would have been working on it a great while.

Cross-Q. 205. You have testified that he mentioned it to you in the fall of 1877. One of the complainants' witnesses has testified that it was talked about in the store and mill office in 1877; two other of complainants' witnesses have testified that it was talked about in the store before the 19th day of March, 1877, and two other of the complainants' witnesses have testified that they saw a talking machine at Drawbaugh's shop on the third day of October, 1876, which was over a year before the date of your boat ride; in view of these facts I should judge that one of two things must be true, to wit, either that the work on the talking machine was going on a long time before you saw it or knew what it was, or else that you have forgotten about your first seeing it, and have mixed up a subsequent conversation with a prior event, somewhat as you at first mixed up the boat ride with the trip to the Centennial. After reflecting upon the matter tell me what you think about it?

Ans. I think that if they had been working on that talking machine that it was kept concealed from me up to the time that Drawbaugh spoke to me about it.

Cross-Q. 206. According to the testimony of Mr. Evans and Joseph and Abraham Ditlow it was talked about in the store at Milltown in 1877, and, as the Ditlows say, prior to the 19th day of March, 1877; haven't you any recollection of hearing it talked about in the store or in the village before Mr. Drawbaugh mentioned it to you?

Ans. I have no remembrance of hearing it until Mr. Drawbaugh mentioned it to me.

Cross-Q. 207. You say you think it must have been concealed from you if the work was going on so long before Mr. Drawbaugh mentioned it to you; I suppose you had little or no knowledge of electricity at that time, had you?

Ans. Not very much; no, sir.

Cross-Q. 208. And you were not a capitalist, were you?

Ans. No, sir.

Cross-Q. 209. You were not in a position, then, to aid Mr. Drawbaugh, either in making practical suggestions about his invention or in furnishing money to get it patented and introduced before the country, were you?

Ans. No, sir.

Cross-Q. 210. Are you a brother of Norman W. Kahney and Ira D. Kahney, who testified in behalf of the respondents in this case?

Ans. Yes, sir.

Cross-Q. 211. Norman W. Kahney is some years younger than you, is he not?

Ans. Yes, sir.

Cross-Q. 212. I suppose he lived more at home from 1871 to 1877, than you did, did he not?

Ans. Yes, sir.

Cross-Q. 213. Which lived the most at home during that period, your brother, Ira D. Kahney, or yourself?

Ans. I don't remember. I don't know where he was living the different years during that period.

Cross-Q. 214. Your father's family moved into Martin Best's house about the 1st of April, 1875, did they not?

Ans. Yes, sir.

Cross-Q. 215. You have testified about a conversation with Daniel Drawbaugh, in which the Centennial was mentioned; do you recollect just what was said about the Centennial during that conversation?

Ans. No, sir.

Cross-Q. 216. Do you recollect anything that was said about it; if so, state all you recollect?

Ans. I don't recollect no more than that we was talking about the machinery and other things at the Centennial.

Cross-Q. 217. Do you remember any machinery that was mentioned as having been at the Centennial during that conversation?

Ans. No, sir.

Cross-Q. 218. How long were you at the Centennial?

Ans. Three days.

Cross-Q. 219. Did you see or hear of any telephones or talking-machines at the Centennial while you were there?

Ans. No, sir.

Cross-Q. 220. Did you ever have any conversation with Mr. Drawbaugh about the Centennial before the Centennial exhibition commenced?

Ans. I don't remember that I had; I don't remember when it was, but he told me he thought of taking his clock to the Centennial if he could get it ready.

Cross-Q. 221. Where was that conversation, and who was present?

Ans. It was in the shop—the conversation was; I don't remember if there was any one present.

Cross-Q. 222. I wish you to reflect carefully and state whether he did not, in that conversation, refer to his lack of means of money, and say that he would like to make an exhibit at the Centennial if he had the means to do it, or to that effect.

Ans. Not to my recollection he didn't.

Cross-Q. 223. Do you remember all that was said during that conversation?

Ans. I don't suppose I do.

Cross-Q. 224. Do you remember whether the clock was all that he said he would like to exhibit at the Centennial, or whether he said that he would like to exhibit the clock and some other things there?

Ans. I don't remember whether he said he wanted to exhibit any other things there or not?

Cross-Q. 225. You have referred to the sale of a secretary by Mr. Drawbaugh to Mr. Reneker, and to a conversation that you heard between them at the time; are you sure that Mr. Drawbaugh said that he had two secretaries?

Ans. Yes, sir.

Cross-Q. 226. If it should turn out that Mr. Drawbaugh never had but one secretary at one time, would you think you had misunderstood or misrecollected the conversation in that respect?

Ans. Yes, sir; if he only had the one secretary, I, of course, misunderstood him.

Cross-Q. 227. You have testified that on one occasion you visited Mr. Drawbaugh's shop and he showed you talking-machines and talked through them to you, and I understand you to say that that interview was about the beginning of 1879; am I correct?

Ans. It was the winter between 1877 and 1878.

Cross-Q. 228. And you could not tell whether it was before the first of January, 1878, or after could you?

Ans. I can't say at the present.

Cross-Q. 229. How are you able to recollect that it was in the winter time?

Ans. Because the farm work was all done and we hadn't anything else to do.

Cross-Q. 230. Was that the last visit to Mr. Drawbaugh's shop of which you have any particular recollections?

Ans. No, sir.

Cross-Q. 231. When was the last visit which you made to his shop before you went west, of which you have any definite recollection?

Ans. I was there in the winter of 1878 and 1879, about January or February, I would say. I can't be very definite about it.

Cross-Q. 232. That is the last time you remember being there, is it?

Ans. Yes, sir.

Cross-Q. 233. Did you see any talking-machines there on that last visit, or was anything said about them there at that time?

Ans. No, sir.

Cross-Q. 234. Was anything said during that last visit about any invention of Mr. Drawbaugh?

Ans. No, sir; I don't remember of having any conversation with Mr. Drawbaugh that evening.

Cross-Q. 235. Who was present that evening?

Ans. My two brothers, Pete McQuade, and George Drawbaugh, I think—I ain't quite sure—and William Fettrow.

Cross-Q. 236. Between the interview which you had at Mr. Drawbaugh's shop, when you went to get the sledge-hammer, and the last interview which you had there in January or February, 1879, do you definitely remember any other particular interview which you had at Mr. Drawbaugh's shop?

Ans. No, sir.

Cross-Q. 237. Do you remember seeing any talking-machines at his shop, or having any conversation with him about them after the sledge hammer interview?

Ans. No, sir.

Cross-Q. 238. How long were you in his shop at the time you went for the sledge-hammer, and who was there?

Ans. I was only in a few minutes, and there wasn't anyone there that I seen except Drawbaugh.

Cross-Q. 239. What room were you in at that time?

Ans. In the room at the head of the stairs at the left side going in.

Cross-Q. 240. Is that the room which you have called his office room?

Ans. Yes, sir.

Cross-Q. 241. How many talking-machines did you see in that room at that time?

Ans. I only seen that one that I remember of.

Cross-Q. 242. That room was in the corner next to the Yellow Breeches and not in the corner next to Milltown village, was it not?

Ans. There are two rooms there; one is next to the side where the stream comes down from Milltown, and the other is next to the Yellow Breeches; I mean the one next to the Yellow Breeches creek.

Cross-Q. 243. What did you see in that room besides the talking-machines at that time?

Ans. I was there only a short time and didn't have time to look around any; I was in there only a few minutes, and don't remember of seeing anything, only what he told me to put up to my ear and seeing something that he talked into.

Cross-Q. 244. How happened you to see those things; did he have them out on the bench when you went into the room?

Ans. I didn't see them at all until after he told me to put that to my ear.

Cross-Q. 245. You couldn't say, then, whether he was working on talking-machines when you went into the room or not, could you?

Ans. No, sir.

Cross-Q. 246. Give your best recollection of the instrument that he talked into during that interview.

Ans. I don't remember much about it only it had a—something with a mouth piece to it.

Cross-Q. 247. Did he hold it in his hand while he was talking into it, or was it sitting on the bench?

Ans. I think it was up against the side of the wall—the board partition.

Cross-Q. 248. Fastened up against the board partition?

Ans. I wouldn't say if it was fastened there or not for I don't know.

Cross-Q. 249. How high was it from the floor; was it above the level of the work-bench and was it about the level of his mouth when speaking or not?

Ans. I don't remember.

Cross-Q. 250. Was it on the same side of the room as the work-bench? And if not, state what side of the room it was on.

Ans. I think it was on the same side; I ain't positive, though.

Cross-Q. 251. You didn't see him put it up there before he talked into it, did you?

Ans. No, sir.

Cross-Q. 252. Inasmuch as you didn't see the machines until he asked you to put one of them to your ear and listen, I suppose that if he had not spoken to you about them, you would have been likely to make your visit and come away without having noticed them, or remembered anything about them, would you not?

Ans. Yes, sir.

Cross-Q. 253. Was the machine which was up against the wall and into which he spoke a large or a small machine, so far as you remember it?

Ans. I don't remember how large it was.

Cross-Q. 254. So far as you saw it did its outer portions appear to be made of wood?

Ans. I don't remember anything about it only the mouth-piece; I remember that it had a small mouth-piece into which he spoke, resembling the mouth-piece on some of those that were got out of the trunk, and showed here yesterday.

Cross-Q. 255. As the machine hung or rested against the wall, do you remember whether the mouth-piece was on top or on the side, and whether he spoke down into it, or simply put his mouth to the side of it, and talked into it as he would into a hole in the side of the wall?

Ans. It was on the side of it—the front side of it.

Cross-Q 256. I now cause the instrument, exhibit "H," to be placed up against the wall in this room, and ask you to look at it while in that position and see if it looks familar to you and whether it looks like the instrument that Mr. Drawbaugh talked into at that time?

Ans. I can't recognize the box; I remember of a mouth-piece, though; I suppose that (exhibit "H") had a mouth-piece, which has been broken off.

Cross-Q. 257. Are you able to say whether this instrument "H" is or is not the instrument which Mr. Drawbaugh then talked into?

Ans. I am not able to say.

Cross-Q. 258. The mouth-piece of the instrument which he then talked into was on the front side of the instrument, just as it is here in the instrument "H," except that this has been accidentally broken; was it not?

Ans. Yes, sir.

Cross-Q. 241. How many talking-machines did you see in that room at that time?

Ans. I only seen that one that I remember of.

Cross-Q. 242. That room was in the corner next to the Yellow Breeches and not in the corner next to Milltown village, was it not?

Ans. There are two rooms there; one is next to the side where the stream comes down from Milltown, and the other is next to the Yellow Breeches; I mean the one next to the Yellow Breeches creek.

Cross-Q. 243. What did you see in that room besides the talking-machines at that time?

Ans. I was there only a short time and didn't have time to look around any; I was in there only a few minutes, and don't remember of seeing anything, only what he told me to put up to my ear and seeing something that he talked into.

Cross-Q. 244. How happened you to see those things; did he have them out on the bench when you went into the room?

Ans. I didn't see them at all until after he told me to put that to my ear.

Cross-Q. 245. You couldn't say, then, whether he was working on talking-machines when you went into the room or not, could you?

Ans. No, sir.

Cross-Q. 246. Give your best recollection of the instrument that he talked into during that interview.

Ans. I don't remember much about it only it had a—something with a mouth piece to it.

Cross-Q. 247. Did he hold it in his hand while he was talking into it, or was it sitting on the bench?

Ans. I think it was up against the side of the wall—the board partition.

Cross-Q. 248. Fastened up against the board partition?

Ans. I wouldn't say if it was fastened there or not for I don't know.

Cross-Q. 249. How high was it from the floor; was it above the level of the work-bench and was it about the level of his mouth when speaking or not?

Ans. I don't remember.

Cross-Q. 250. Was it on the same side of the room as the work-bench? And if not, state what side of the room it was on.

Ans. I think it was on the same side; I ain't positive, though.

Cross-Q. 251. You didn't see him put it up there before he talked into it, did you?

Ans. No, sir.

Cross-Q. 252. Inasmuch as you didn't see the machines until he asked you to put one of them to your ear and listen, I suppose that if he had not spoken to you about them, you would have been likely to make your visit and come away without having noticed them, or remembered anything about them, would you not?

Ans. Yes, sir.

Cross-Q. 253. Was the machine which was up against the wall and into which he spoke a large or a small machine, so far as you remember it?

Ans. I don't remember how large it was.

Cross-Q. 254. So far as you saw it did its outer portions appear to be made of wood?

Ans. I don't remember anything about it only the mouth-piece; I remember that it had a small mouth-piece into which he spoke, resembling the mouth-piece on some of those that were got out of the trunk, and showed here yesterday.

Cross-Q. 255. As the machine hung or rested against the wall, do you remember whether the mouth-piece was on top or on the side, and whether he spoke down into it, or simply put his mouth to the side of it, and talked into it as he would into a hole in the side of the wall?

Ans. It was on the side of it—the front side of it.

Cross-Q 256. I now cause the instrument, exhibit "H," to be placed up against the wall in this room, and ask you to look at it while in that position and see if it looks familar to you and whether it looks like the instrument that Mr. Drawbaugh talked into at that time?

Ans. I can't recognize the box; I remember of a mouth-piece, though; I suppose that (exhibit "H") had a mouth-piece, which has been broken off.

Cross-Q. 257. Are you able to say whether this instrument "H" is or is not the instrument which Mr. Drawbaugh then talked into?

Ans. I am not able to say.

Cross-Q. 258. The mouth-piece of the instrument which he then talked into was on the front side of the instrument, just as it is here in the instrument "H," except that this has been accidentally broken; was it not?

Ans. Yes, sir.

Cross-Q. 259. Do you remember whether, in that machine that he talked into, there were brass binding posts on the side, as there are here in the instrument "H"?

Ans. I don't remember if there was.

Cross-Q. 260. Do you remember seeing the wires that were connected to the machine that he talked into?

Ans. There was wires from the machine that he talked into to the machine that I held to my ear—wire or cord; I don't know which it was; I suppose that it was wire, though.

Cross-Q. 261. Did you understand at the time that the machine operated by electricity?

Ans. No, sir.

Cross-Q. 262. You didn't understand how it operated, did you; that is, on what principle or by what power?

Ans. No, sir.

Cross-Q. 263. Were the wires wrapped with something that made them look like cords?

Ans. Yes, sir.

Cross-Q. 264. There were two wires connecting the machines, were there not?

Ans. I don't remember how many there was.

Cross-Q. 265. I now open the door of the instrument "H" and ask you whether you have any recollection of looking into the machine which Mr. Drawbaugh talked into, or of his opening a door connected with the machine as I now open this door?

Ans. No, sir; I have no recollection of it.

Cross-Q. 266. Then you have no recollection of his doing anything to the machine into which he talked except of his going up to it and talking into it, have you?

Ans. That is all.

Cross-Q. 267. Where did he get the instrument which he handed to you to listen at?

Ans It was hanging up against the wall on wires.

Cross-Q. 268. What is your recollection of the size of that instrument which you listened at?

Ans. I don't have much recollection of the size of it.

Recess for lunch until half-past two, P. M.

JANUARY 4, 1883, 2.30, P. M.

Examination resumed pursuant to adjournment.

Present, same counsel.

Cross-examination of Orlando Kahney, by Mr. Hill, continued:

Cross-Q. 269. I will now place the instrument "J" against the side of the wall and ask you to look at it carefully and see if it resembles, according to the best of your recollection, the machine which Mr. Drawbaugh then talked into any more closely than the instrument "H," which you saw this forenoon, resembled it.

Ans. No, sir; I don't recognize none of the boxes.

Cross-Q. 270. You wouldn't be able to say, then, whether it was or not this instrument "J" that Mr. Drawbaugh then talked into, would you?

Ans. No, sir; I would not, because I didn't recognize the box at all, and don't know what it was.

Cross-Q. 271. Please look over all the telephones here present and pick out the one, which, according to the best of your recollection, most nearly resembles the instrument which you held in your hand and listened at while Mr. Drawbaugh was talking into the instrument against the wall on that occasion?

Ans. I can't recognize any of them as the one which I held in my hand; all that I remember is, that it was a dark piece of wood with a mouth-piece on it, and that I held it to my ear, and that it was round.

Cross-Q. 272. Could you swear that it was not one of these two instruments "D" and "E?"

Ans. I could not swear that those are not the instruments, but I don't recognize them as the one.

Cross-Q. 273. After you saw those talking-machines there, that day when he talked you through them, if you had seen at his shop any small round wooden instrument with a mouth-piece on it, you would have taken it to be some form of his talking-machine, would you not?

Ans. Most likely I would have.

Cross-Q. 274. You have in answers 75 to 83 mentioned the fact of seeing at Mr. Drawbaugh's shop on some occasion the instruments "F" and "B," which I now show you, but which you did not then know to be talking-machines; who was present when you saw those instruments, or do you recollect any of the circumstances connected with your visit to the shop when you saw them?

Ans. I don't remember any of the circumstances connected with the visit to the shop.

Cross-Q. 275. Do you recollect of seeing them more than once or only once, or is your recollection only a mere general recollection of seeing them there at some time or times; so that they are familiar to you as having been seen there, but nothing more?

Ans. I only remember of seeing them there; I may have seen them more than once and may not; I am not positive about that, but I recognized them as soon as they were showed to me, to have seen them in the shop.

Cross-Q. 276. Do you remember whether Mr. Drawbaugh was present at any time when you saw them?

Ans. I don't remember if he was.

Cross-Q. 277. Do you remember what you thought they were when you first saw them?

Ans. I didn't form any idea what they was at all.

Cross-Q. 278. Were they sitting out on the bench in his office, in plain sight?

Ans. Yes, sir.

Cross-Q. 279. When you took the boat ride with the young ladies, in the fall of 1877, whose boat did you have?

Ans. I don't remember whose boat it was.

Cross-Q. 280. Did you get permission to take it, or take it without permission?

Ans. I don't remember, but I think I took the boat without permission.

Cross-Q. 281. Where was the boat tied up when you took it?

Ans. I don't remember whether it was over at the old tree by the spring, or over by the machine-shop; it was at one of those two places.

Cross-Q. 282. Those places are both within a few rods of Mr. Drawbaugh's shop, are they not?

Ans. Yes, sir; not a great ways off.

Cross-Q. 283. Describe the boat.

Ans. It was a flat-bottomed boat; I think it had a board on each end—I ain't positive—and a board at each side; and I think the boat belonged to William Heck—I won't say positively.

Cross-Q. 284. Did the boat have any oars in it, or did you have to get oars elsewhere, or use a sail?

Ans. It didn't have oars in it, and I didn't use no sail in it.

Cross-Q. 285. What did you do to propel it?

Ans. I pushed it with a pole.

Cross-Q. 286 Do you remember whether it had any row-locks?

Ans. I don't remember if it had.

Cross-Q. 287. Was there any other boat in sight there where you got that one, or was that the only one in the vicinity?

Ans. There generally was two boats there, but I don't remember whether the other one was just there at that time or not.

Cross-Q. 288. Describe the other boat that was generally there, and say to whom it belonged.

Ans. The other boat was peaked at one end; I ain't positive but what it was peaked at both ends, and had bowing sides on, and I think it was a flat-bottom; I ain't positive; I think it was red; I ain't certain about that, though.

Cross Q. 289. Was the boat that you took for the boat ride painted; if so, what color?

Ans. I don't remember.

Cross-Q. 290. Had it peaked or square ends?

Ans. I don't remember, but I think it had square ends.

Cross-Q. 291. Were you in the habit of taking the girls out occasionally for a boat ride when you were a young fellow around home?

Ans. No, sir; I guess that was the only time I ever took any girls out boat riding in Milltown.

Cross-Q. 292. When do you first recollect of seeing Mr. Drawbaugh's electrical clock in his shop?

Ans. I don't remember when it was; I can't tell when it was that I first saw it.

Cross-Q. 293. Have you any recollection of seeing or hearing of his having any metal plates buried in the ground, and wires running from them into the shop, at any time?

Ans. Yes, sir; I never heard of them being metal plates, but I heard of him having wires running from the ground up into the shop.

Cross-Q. 294. Do you know what that apparatus was used for?

Ans. They said it was to his electric clock.

Cross-Q. 295. When did you first hear of those wires running from the ground to his electric clock?

Ans. I don't remember when it was.

Cross-Q. 296. Have you any idea about the time when you first heard of it?

Ans. No, sir.

Cross-Q. 297. How far did Abraham Coble live from Drawbaugh's shop in 1877 and 1878?

Ans. About a mile and a half or two miles, or some such manner.

Cross-Q. 298. How far was William Sherbone's quarry from Daniel Drawbaugh's shop?

Ans. About two miles and a half, or some such manner; I don't just know the distances of those places; I have forgotten them.

Cross-Q. 299. When did you first see the weather guage at Mr. Drawbaugh's shop?

Ans. I don't remember when it was that I first seen it.

Cross-Q. 300. You have mentioned seeing at Drawbaugh's shop a magnetic clock, a weather guage, a paper-sack folder, faucets, a nail machine, a dial telegraph, and a machine to wrap thread around a wire; do you remember which of those machines you first saw there?

Ans. No, sir; I do not.

Examination taken, reduced to writing, and by the witness affirmed and subscribed to before me, this 4th day of January, 1883.

FRED. M. OTT,
Examiner.

ORLANDO KAHNEY.

Deposition of R. C. SWAN, *a witness called for the complainants, taken by commission at San Francisco, September* 23, 1882, *on direct interrogatories filed by J. J. Storrow, Esq., in behalf of the complainants, and cross-interrogatories filed by Lysander Hill, Esq., on the part of the defendants.*

R. C. Swan, of the city of San Jose, in the county of Santa Clara, State of California, age 52 years and upwards, being duly and publicly sworn, pursuant to the directions hereto annexed, and examined on the part of the complainants, doth depose and say, as follows:

Q. 1. State your name, age, residence, and occupation.

Ans. My name is R. C. Swan; my age is 53; I reside in San Jose; my occupation is general salesman for Berry & Evans, of San Jose, and I have charge of their mill.

Q. 2. I have annexed to this commission a certified copy of an inquisition taken at said Williamsport, October 15, 1867, before John P.

Hepburn, J. P., upon the body of a man named George Miller, in which inquisition R. C. Swan is named as foreman of the jury, state whether or not you are the R. C. Swan therein referred to, and whether you acted as foreman of the jury in the matter of said inquest.

Ans. I am, and I did.

(Memorandum by the commissioner:

I find no question numbered three on the said commission.)

Q. 4. The said inquest states, that at the time of his death there was upon the person of said George Miller three hundred and ninety-four dollars and forty cents, ($394.40,) which at the time of the inquest was in the hands of R. C. Swan, foreman of the jury; state whether or not, in fact, the said money was actually in your hands, as stated, at the time of the inquest.

Ans. It was.

Q. 5. State whether or not, one William Darr, from Eberly's Mills, Cumberland county, Pennsylvania, presented himself at the time, or shortly thereafter, claiming the body of said Miller and the property found upon his person, with a written order from one Daniel Drawbaugh, claiming to be the owner of said money, and from the widow of said Miller and other proper authorities entitled to dispose of the body, and whether the body was delivered to said Darr accordingly, and whether the said $394 40 was thereupon delivered by you to said Darr.

Ans. William Darr did present himself with such an order as stated; and the body and the said money were by me delivered to the said Darr.

Q. 6. When you delivered said money to Darr, did you receive from him a written order or other paper; if so, please produce it and annex it, if you have it?

Ans. I received a written order from him and I think a receipt on the back of the order, if I remember right, it having been so long since. But I received the order, and I think, as I said, a receipt on the back of the order for the money, signed by Darr, if I remember right. I cannot find that order, and I presume it is destroyed; I had it since I came to California. I had it in the last five years. The inquest was fifteen years ago this fall, I think.

Q. 7. State whether or not any part of said three hundred and ninety-four dollars and forty cents was retained, withdrawn or used for the purpose of paying the funeral expenses and the expenses of inquest on the said body.

Ans. I think not; I do not think a dollar of that money was used for any purpose. I know it was all paid to Darr, and I do not think that he used a dollar of it. Of course I cannot tell what he did with the money, but I do not think a dollar of it was used; I have no recollection of it.

Q. 8. State whether or not you accompanied said Darr with the body to Harrisburg or Bridgeport.

Ans. I accompanied the body to Bridgeport.

Q. 9. State whether you asked or required said Darr to expend any part of the money found on the person of the dead man to pay for any expenses.

Ans. I did not—not a dollar.

Q. 10. State whether any of that money ever came into your hands after you first delivered it to said Darr at Williamsport.

Ans. No, sir; not a cent after it was paid over to him.

Q. 11. State whether, upon arriving at Bridgeport, one of the neighbors or friends of the deceased came with a wagon and hauled the body away, and whether you accompanied them further or how far you accompanied the body.

Ans. When we first came to Bridgeport there was no wagon there, but after waiting about an hour it came, and the body was taken away; I only accompanied the body to Bridgeport.

Q. 12. It has been alleged that about one hundred dollars of that money, or some other considerable portion thereof, was taken from the body of the dead man by the authorities, or other persons at Williamsport, and applied to the payment of the coroner's inquest, the undertaker's bill at Williamsport, and the expenses of transporting the body from Williamsport to Bridgeport; if your knowledge of the facts enables you to say that this was not done, but that the whole money stated by the inquisition to be in your possession was paid to Mr. Darr without any deduction whatever, and without any claim by you or others for any deduction, you will please state what the facts are in this respect.

Ans. All of the money was paid to Darr. There were no expenses of transportation or anything else because neither Darr, I, nor the body paid any fare, and I handed it all over.

Q. 13. At the time of said inquest were you connected with the police force of Williamsport; and if so, in what capacity?

Ans. I was policeman in Williamsport; and I think, if I remember right, I was also constable at the same time, and tax collector.

Q. 14. Did you, on that occasion, come to Harrisburg for the purpose of making an arrest, or performing any other duty as an officer?

Ans. I am not positive about that; if my memory serves me right my main object was to satisfy myself positively that the order for that money was correct; not being from the widow it was possible it might be wrong; I was a little more fearful of that than anything else, but I ascertained down there it was all right, and I paid no more attention to it.

Cross-examinnation by L. Hill, Esq., counsel for the defendants.

Cross-Q. 1. Mr. Darr has testified in this case that while you and he were coming down together on the train from Williamsport to Bridgeport his suspicions were excited that you intended to rob him; can you account for this condition of his mind; and if yea, how do you account for it? State any facts bearing upon the subject.

Ans. I cannot help his suspicions; there was no other reason for it than my being afraid that the order might not be correct, made me perhaps a little more anxious, or a little more zealous to do my duty, and a little more careful that he should not get away out of my sight until I knew that the order was correct; I feared if there was anything wrong that I would have to repay the money again to the widow.

Cross-Q. 2. Why did you come down on the train with Mr. Darr on that occasion?

Ans. My preceding answer answers this question.

Cross-Q. 3. Did you leave the train at Bridgeport and walk across to Harrisburg; and if so, why did you leave the train at Bridgeport instead of riding on it across to Harrisburg?

Ans. I did leave the train at Bridgeport and walked across to Harrisburg for the reason I stated before; that the team was not there for the body when the train arrived, and I waited until the team did arrive, and I also stopped there to make inquiries about the genuineness of the order for the money and satchel.

Examination taken, reduced to writing, and by the witness sworn and subscribed to this 23d day of September, A. D. 1882, before me.

CRITTENDEN THORNTON,
Commissioner.

R. C. SWAN.

[*Annexed to Deposition of R. C. Swan.*]

COMMONWEALTH OF PENNSYLVANIA, } ss:
Lycoming County, }

An inquisition indented and taken at the city of Williamsport, in the county of Lycoming, the 15th day of October, in the year of our Lord one thousand eight hundred and sixty-seven, before me, John Hepburn, J. P., in and for said county, upon the view of the body of a man named George Miller, by a pass-book found upon his person, then and their lying dead upon the railroad track in front of the depot, in the city of Williamsport, upon the solemn affirmations of R. C. Swan, C. P. Colver, J. F. Vanderslice, W. W. Hicks, J. C. Peterman, and William Bankhart, good and lawful men of the county aforesaid, to inquire on the part of the Commonwealth when, where, and how, and after what manner the said George Miller came to his death, do say upon oaths of William Frizzel and David Ferguson, that the said George Miller came to his death accidentally by the cars passing over him and crushing his head; and, moreover, the jurors, upon their oaths, do say that the said George Miller, at the time of his death, had upon his person one pocket knife, three hundred and ninety-four dollars and forty cents; also one carpet-sack, containing one shirt and one handkerchief, which are now in the hands of R. C. Swan, foreman of the jury.

In witness whereof, as well the aforesaid justice of the peace, as the jurors aforesaid have to this inquisition put their hands and seals on the day and year above mentioned.

JOHN HEPBURN, *J. P.*, [SEAL.]
R. C. SWAN, *Foreman*, [SEAL.]
C. P. COLVA, [SEAL.]
J. F. VANDERSLICE, [SEAL.]
W. W. HICKS, [SEAL.]
J. C. PETERMAN, [SEAL.]
W. H. BANKHART, [SEAL.]

John Hepburn, J. P., viewing the dead body,	$2 75
Summoning and qualifying inquest,	1 37
Summoning and qualifying each witness,	50
R. C. Swan, foreman,	50
Charles P. Colver,	50
J. F. Vanderlice,	50
W. W. Hicks,	50
J. C. Peterman,	50

W. H. Bankhart,	$ 50
Witness, David Furgeson,	31
Wm. Frizzel,	31
	$8 24

Received payment, Williamsport, November 21, 1867.

JOHN HEPBURN, J. P.

I, H. W. Whitehead, commissioners' clerk, do hereby certify the above to be a true and correct copy of inquisition paper of the body of George Miller, now on file in the commissioners' office, in and for the county of Lycoming, and State of Pennsylvania.

H. W. WHITEHEAD,
Clerk.

Jan. 19, 1882.

Seal of the Commissioners' Office of Lycoming county, Pennsylvania.

RICHARD B. ZIEGLER, *being produced, sworn, and examined, saith*:

Examined by Mr. Smith:

My age is thirty-five; residence, Harrisburg, Pennsylvania; occupation, telegraph operator.

Q. 1. How long have you been employed in the telegraph office at Harrisburg?

Ans. About eighteen years.

Q. 2. What is your present position or your special duties in the office at the present time?

Ans. Chief operator.

Q. 3. Who is the present manager or superintendent of the office and who was the manager or superintendent before him?

Ans. Mr. Bigler is the present manager, and Mr. Clute was assistant superintendent and manager before him.

Q. 4. State whether or not the Harrisburg Car Company has had a private telegraph line between different parts of their works and the telegraph office in Harrisburg; and, if so, state as nearly as you can how long that private line has been in existence.

Ans. They have, and I think it was built about 1871 or 1872.

Q. 5. State what parts of their works were connected with that line or what stations or offices were upon it.

Ans. The car company's office, the car company's saw-mill, the foundry and machine works, and the Western Union telegraph office.

Q. 6. Was this line put up by the Harrisburg Car Company or by the Western Union Company?

Ans. I think the Harrisburg Car Company furnished the material, and the Western Union line men, under Mr. Clute's superintendence, erected the line.

Q. 7. Do you know what instruments were first used on this line between the several stations?

Ans. They used the Phelps' printing instrument.

Q. 8. State whether or not the instrument proved satisfactory to the company; and if not, for what reason they were unsatisfactory.

Ans. Rather unsatisfactory; they were continually getting out of adjustment, but I can't tell why.

Q. 9. State whether or not these instruments were changed for other ones; and if so, what kind; and as nearly as you can when the change was made.

Ans. The printing instruments were used about two years as near as I can recollect, when Mr. Hildrup concluded to adopt the Morse system.

Q. 10. State, if you know, whether they found any difficulty in the use of the Morse system at any or all of their stations; and if so, what the difficulty was.

Ans. There was no difficulty excepting that we had to write very slowly with the car-shop office, because of the inexperience of Mr. Hildrup and Mr. Boyer, as Morse operators; the operator at the foundry and machine-works was an experienced one.

Q. 11. Who was the operator at the car-shop office, and who at the saw-mill office?

Ans. There were several in the car-shop office—Mr. Hildrup, Mr. Boyer, and a young man named Gastrock. Mr. William J. Stees, superintendent of the saw-mill, tried to learn, but was not very apt, and soon gave it up.

Q. 12. If anything was adopted at any or all of the stations on that line, in place of the Morse instruments, state what it was, and, as nearly as you can, when the change was made.

Ans. The change was made during the latter part of 1877 or early in 1878, when the telephone was adopted between the different offices of the car company.

Q. 13. Was it also adopted in the Western Union office, on that private line?

Ans. Yes, sir.

Q. 14. State, if you remember, whether or not its adoption on that line was very early in the use of the telephone in Harrisburg.

Ans. Yes; they were among the first who adopted it.

Q. 15. What telephone instrument was made use of at that time?

Ans. The Phelps.

Q. 16. Have you an instrument of that kind with you? If so, produce it as an exhibit in the case.

Ans. I have one with me, and I now produce it.

[*Instrument offered in evidence, to be marked "Exhibit Phelps Telephone."*]

Q. 17. State whether or not, after those telephone instruments were in use on that private line, Mr. Daniel Drawbaugh, who is present here, came to the Western Union office; and if so, whether he came alone, or in company with anyone else; and if in company with anyone else, with whom?

Ans. He did; he came to the office with Mr. William J. Stees sometime early in the summer of 1878, or late in the spring.

Q. 18. Had you ever seen Mr. Drawbaugh before that time?

Ans. Not to know him.

Q. 19. Had you heard his name mentioned in connection with an electrical clock which was exhibited in Harrisburg that spring?

Ans. I had, and read notices of it in the Harrisburg papers.

Q. 20. Did you see that clock; and if so, was it before or after Mr. Drawbaugh came to the office?

Ans. I saw the clock, and think it was after I met him, but can't say positively.

Q. 21. Where did you see the clock when you did see it?

Ans. In the jewelry store of Mr. Denehey.

Q. 22. State whether or not Mr. Clute was there at the time of this visit; and with whom, if with any one belonging to the office, Mr. Drawbaugh conversed.

Ans. Mr. Clute was not there at the time, and I was the only one with whom Mr. Drawbaugh had any conversation.

Q. 23. If Mr. Drawbaugh stated his object in coming there, state what it was, giving his language as nearly as you can.

Ans. He said he would like to see one of our telephones, and asked if I had any objection to do so.

Q. 24. What answer did you make to him and what did you do in consequence of his request?

Ans. I said I had not; and invited him into the operating room and showed him a telephone which was on Mr. Clute's desk.

Q. 25. State whether or not that was a telephone like this which you have produced as an exhibit.

Ans. It was like this one.

Q. 26. Did Mr. Drawbaugh make any further request with regard to the telephone which you showed him, and if so what was it, and what reply did you make, and what was done in response to his request?

Ans. He did; he asked if I would object to allow him to see the inside of it; I said no, and opened it.

Q. 27. If he said anything after examining the inside of it, state what he said, giving his language as nearly as you can.

Ans. He looked at it a moment or so and with a significant shake of his head said, as near as I can recollect, "Mine will not do; it is too much like that."

Q. 28. Was anything further said by him; and if so, what?

Ans. Nothing of any consequence; I closed the box and Mr. Drawbaugh left.

Q. 29. Did he say anything about bringing his instruments over to show you; if so, what?

Ans. I think he said something about bringing an instrument to the office.

Q. 30. State whether or not he came to the office again; and if so, how long after this first visit, and what, if anything, he brought with him.

Ans. He did, within a week or two, I think, after; and brought an instrument with him for Mr. Clute to examine.

Q. 31. State whether or no Mr. Clute was then at the office, and whether or not Mr. Drawbaugh took the instrument away with him or left it there.

Ans. Mr. Clute was not in, and Mr. Drawbaugh left it there for him.

Q. 32. State whether or not the instrument was in an envelope, and whether or not you examined it at that time, or at any subsequent time.

Ans. It was wrapped in a piece of newspaper, and I placed it on Mr.

Clute's desk, and shortly after Mr. Drawbaugh left I unwrapped it and examined it for a short time.

Q. 33. Will you look at the instrument which I now show you, marked "Exhibit A," and state whether or not that is the instrument which Mr. Drawbaugh brought to your office?

Ans. Yes, sir; I recognize that as the instrument.

Q. 34. Do you know how long the instrument remained at your office, and who took it away?

Ans. I do not remember the length of time, but think not a great while, perhaps a week; it was taken away during my absence.

Q. 35. When and where did you next see the instrument?

Ans. In the office where testimony was being taken, in Harrisburg—Mr. Ott's office, in Bergner's building.

Cross-examined by Mr. Hill:

Cross-Q. 36. You say that the visit of Mr. Drawbaugh, when he brought the instrument to the Western Union telegraph office, was within a week or two after his first interview with you there; was it not within a day or two after his first interview with you there?

Ans. No, sir; I think it was longer than that.

Cross-Q. 37. Did anybody come with him when he brought the instrument?

Ans. I think he was alone.

Cross-Q. 38. Did you have any conversation with him at that time; if so, what was it?

Ans. No extended conversation; he handed me the instrument to give to Mr. Clute, and I said I would.

Cross-Q. 39. At the time he came there with Mr. Stees, and wanted to see the Phelps telephone, how long was he there?

Ans. I should think about ten or fifteen minutes.

Cross-Q. 40. Did you know how Mr. Stees happened to come with him?

Ans. No; I supposed to introduce him.

Cross-Q. 41. Mr. Stees is dead, is he not?

Ans. He is.

Cross-Q. 42. Can you give the date of his death?

Ans. I think it was in the summer of 1881.

Cross-Q. 43. He was run over by a locomotive in the streets of Harrisburg, and instantly killed, was he not?

Ans. He was run over at a railroad crossing near his office; I don't know whether it was a public street or not.

Cross-Q. 44. Mr. Drawbaugh has testified on pages 1047 and 1048, of respondents' printed record, that Mr. Stees had the transmitter "Exhibit J," and the receiver "Exhibit N," in his possession perhaps two or three months; and that he, Stees, may have shown it to some parties; do you know anything about that?

Ans. No, sir.

Cross-Q. 45. Do you recollect any of the conversation that took place during the visit of Stees and Drawbaugh to your office, except what you have here testified to?

Ans. No, sir; there was very little said by Mr. Stees; he introduced me to Mr. Drawbaugh, and I think left the office immediately after telling me what the object of Mr. Drawbaugh's errand was.

Adjourned until January 5, 1883, at 9, A. M.

JANUARY 5, 1883, 9, A. M.

Examination resumed pursuant to adjournment.

Present, Mr. Storrow for complainants and Mr. Hill and Mr. Jacobs for respondents.

Cross-examination of Richard B. Zieyler by Mr. Hill, continued:

Cross-Q. 46. It was after Mr. Stees came in and introduced Drawbaugh and left your office that Mr. Drawbaugh made the remark that you mentioned in your 27th answer; was it?

Ans. It was.

Cross-Q. 47. Did Drawbaugh make that remark to any person or to himself?

Ans. I suppose the remark was to me.

Cross-Q. 48. Will you repeat the remark, giving the words exactly as far as you remember them?

Ans. As far as I remember, they were, "Mine will not do; it is too much like that."

Cross-Q. 49. Spoken words are difficult to remember exactly, especially after the lapse of about five years; are you able to swear that you repeat his language exactly as he said it and all he said?

Ans. Well, as near as I can recollect they were the words he used; his remarks made an impression and I don't think I could have misunderstood them.

Cross-Q. 50. Did you know what he meant by the remark at the time?

Ans. I supposed he undertook to get up a telephone of his own and was satisfied after seeing the one I showed him that his would be an infringement.

Cross-Q. 51. That was your supposition only, but you didn't know that to be the correct explanation; did you?

Ans. I understood he was working at a telephone, and supposed he wanted to see ours in order to satisfy himself.

Cross-Q. 52. I want to distinguish your suppositions from your positive knowledge, as the former are not evidence, and the latter is. Did you know anything about his meaning, further than the mere supposition or guess-work that you have mentioned in your last two answers?

Ans. His remarks were very few, and the one made when seeing the inside of my telephone satisfied me that he thought his too much like ours to be of any value to him.

Cross-Q. 53. Did he make any remark explanatory of the remark which you have quoted in your 27th answer?

Ans. Not to my recollection; his visit was very short.

Cross-Q. 54 He didn't say that the remark which he made applied to a telephone which he had made, or to some idea which he proposed to work out; did he?

Ans. Not that I remember.

Cross-Q. 55. He didn't say what it was that the thing which he had in mind would not do for; did he?

Ans. I think not; but I understood he was working at a telephone.

Cross-Q. 56. He didn't say whether his remark applied to the whole instrument, or to some part of the instrument which he had particularly in mind; did he?

Ans. Not that I remember; he entered into no details.

Cross-Q. 57. Was the Phelps telephone which you showed him a magneto or a carbon instrument?

Ans. It was one similar to that which I produced yesterday—a magneto.

Cross-Q. 58. Now, are you entirely certain that you opened that Phelps instrument for him at that time, and was it not at a time long afterwards, that you first opened a Phelps instrument, and showed him the interior?

Ans. It was at that time; I never met the gentlemen but twice.

Cross-Q. 59. Did you ever know of his coming to your office, and

having a Phelps telephone opened for his inspection in the year 1879 or 1880?

Ans. I do not remember of seeing him there after the visit I have mentioned.

Cross-Q. 60. Did the Phelps telephone operate satisfactorily, or not?

Ans. It worked pretty well, and seemed to give satisfaction.

Cross-Q. 61. Did Mr. Stees have one of them in his office at the time of Mr. Drawbaugh's visits to your office?

Ans. Yes.

Cross-Q 62. Do you recollect of Mr. Stees making any complaints about not being able to hear satisfactorily with the telephone which he was using at his office?

Ans. Yes, occasionally.

Cross-Q. 63. How long were these Phelps telephones, of the form which you produced yesterday, (commonly known as the "snuff-box" form,) continued in use by your company, before they were superseded by other forms of telephone?

Ans. I do not remember distinctly.

Cross-Q. 64. Give your best idea of the various changes that have been made in telephones at your office, from the time when telephones first began to be used, to the present time; give the time when the different changes were made, and their order, so far as you remember.

Ans. The first pattern we received was the Phelps "snuff-box," (such as I produced yesterday,) late in 1877, or early in 1878; we had that in use on a line from the Adjutant General's office to the Western Union office, at the time of the inauguration of Gov. Hoyt in January, 1878. I find the following paragraph, quoted from the Harrisburgh *Telegraph*, of March 16, 1878, in Miss S. Weaver's deposition in this case:

"THE TELEPHONE.

"The telephone is now in use in this city, at the insane hospital, ar-
"senal, Adjutant General's office, Harrisburg Car Company's office; also,
"their new saw-mill, W. T. Hildrup's residence, West Fairview, Paxton
"rolling-mill, and Henry McCormick's office. The Western Union office
"work a telephone to the above points. Superintendent McCrea also has
"a private line between his residence and office."

The "snuff-box" was followed by the "crown" and "double crown" during the summer of 1878, and during the following winter, 1878-9 by the Edison Carbon Transmitter, and subsequently by the "pony crown" as a receiver. In 1880 we replaced these by the Blake transmitter and

the Bell "butter stamp" receiver, which have been used ever since. The Western Union company did not furnish any telephones to the Pennsylvania Railroad company; they obtained them directly from the Bell company, I suppose, through Mr. Keiffer for use in Harrisburg.

Cross-Q. 65. Did you understand the Phelps telephone to have been invented by Mr. Phelps, who was an officer or employé, of the Western Union Telegraph Company in New York?

Ans. That was my understanding.

Cross-Q. 66. Do you understand that the Western Union Telegraph Company some time ago contracted with the owners of the Bell patents for certain exclusive privileges and rights thereunder?

[*Question objected to by Mr. Storrow, as immaterial, and because it does not appear that the witness has any means of knowledge upon the subject.*]

Ans. I never understood any thing about the arrangements, having no means of ascertaining; and not being interested, I paid little attention to the matter.

Cross-Q. 67. You are an employé of the Western Telegraph Company, are you not?

Ans. I am.

Cross-Q. 68. Is it not your understanding that the Western Union Telegraph Company, your employers, are largely interested in the telephone business, in conjunction with the Bell Telephone Company?

[*Objected to by Mr. Storrow, as above.*]

Ans. I so understand it now; yes, sir. What I meant by not being interested, was in a pecuniary view.

Cross-Q. 69. Is it not your understanding, that the Western Union Telegraph Company is pecuniarily interested in the telephone business?

[*Same objection.*]

Ans. That is my present understanding.

Cross-Q. 70. Please give the full name of the Mr. Clute, to whom you referred in your examination-in-chief.

Ans. Horace A. Clute.

Cross-Q. 71. State what his connection with the telephone business has been for the past five years?

Ans. When the telephone first came out he introduced them in Harrisburg and had charge of that business exclusively up to some time last summer (1882,) I think, when he resigned as manager. I mean that he had exclusive control of the telegraph business and was at the same time manager and assistant superintendent for the Western Union Telegraph

Company and as such had charge of their telegraph business in Harrisburg and neighborhood.

Cross-Q. 72. You state that when Mr. Drawbaugh was at your office in the spring of summer of 1878 you had heard that he was getting up a telephone; do you know when you first heard that?

Ans. I can't remember how long before I met Drawbaugh, but it was not a great while.

Cross-Q. 73. Do you remember how you first heard it?

Ans. I think it was through Mr. Stees.

Cross-Q. 74. Did not Mr. Stees inform you that Mr. Drawbaugh had been at work on telephones for very a long time?

[*Mr. Storrow objects to any attempt to introduce hearsay statements of Mr. Stees in favor of his friend.*]

Ans. I do not think he ever said anything about the length of time.

Cross-Q. 75. When Mr. Stees used the telephone to communicate from his office to your office, who generally responded at your place?

Ans. Mr. Clute generally; during his absence any one who was not engaged when the office was called.

Cross-Q. 76. Did you ever respond to Mr. Stees' call yourself?

Ans. Yes, sir; frequently.

Cross-Q. 77. At any time when you personally responded to his call did you ever hear him call through the telephone for Mr. Clute and say that Mr. Daniel Drawbaugh was at his (Stees') office and wanted to see Mr. Clute, and had invented or worked on telephones years ago, or words to that effect?

[*Same objection as above.*]

Ans. I do not remember anything of the kind.

Cross-Q. 78. At your interviews with Mr. Drawbaugh in 1878 did he say anything about having invented a telephone or telephones?

[*Objected to by Mr. Storrow as incompetent.*]

Ans. I don't remember that he did.

Cross-Q. 79 Did he say anything about how long he had been working on telephones?

Ans. No, sir.

Cross-Q. 80. Do you know what Mr. Clute's physical and mental condition has been for some time past, and is now?

Ans. Physically he appeared and seems now to be all right. Mentally

he was last summer in a pretty bad way. At present I do not consider him to be in first-class condition, mentally.

Cross-Q. 81. Has he been in the insane asylum?

Ans. I do not know.

Cross-Q. 82. Has he been capable of attending to business for the last five or six months?

Ans. During the summer for a while he was not; at present he is carrying on the livery business.

Not waiving the objections to the declarations and statements of Mr. Stees concerning Mr. Drawbaugh, complainants' counsel re-examines as follows, de bene esse:

Q. Q. 83. If you ever heard Mr. Stees say anything with regard to Mr. Drawbaugh's working on the telephone, will you please state what it was, where you heard it, whether it was before or after the visit of Mr. Drawbaugh to the Western Union office which you have described, and how near the time of that visit?

[*Objected to by Mr. Hill as incompetent.*]

Ans. After the telephone had been introduced in Harrisburg and in Mr. Stees' office, upon several occasions when visiting our office Mr. Stees spoke to me about Mr. Drawbaugh getting up a telephone, and used language something like the following: "Never mind, old Dan. Drawbaugh is getting up a telephone that will beat yours." This was during the spring of 1878; that was before I was introduced to Mr. Drawbaugh.

Q. Q. 84. Please state whether you had before that heard that Mr. Drawbaugh was at work on a telephone, or whether that was the first you had heard on the subject?

Ans. I think that was the first that I heard.

Re-cross by Mr. Hill:

Re-c oss-Q. 85. Did Mr. Stees ever inform you about his visiting Mr. Drawbaugh's shop and seeing speaking telephones there long before the Bell telephone was introduced into use at Harrisburg?

Ans. Not that I remember.

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me, this 5th day of January, 1883.

FRED. M. OTT,
Examiner.

RICHARD B. ZIEGLER.

JANUARY 5, 1883, 2.30, P. M.

Examination resumed, pursuant to adjournment.

Present same counsel.

WILLIAM SADLER, *being produced, affirmed, and examined, saith:*

Examined by Mr. Storrow:

My age is fifty-eight; residence, Camp Hill, Cumberland county, Pennsylvania; occupation, not any at present; I used to be a farmer.

Q. 1. Have you held any public offices in Cumberland county; and if so, mention some of them, and when you held them?

Ans. I was county commissioner for three years, from 1876 to 1879; I have been school-director for twenty-one years in succession, and two years out of the succession; I have held other minor township offices, such as supervisor, election officer, and so on; I don't remember all of them.

Q. 2. How long have you lived at Camp Hill, and where did you live before that?

Ans. I have lived at Camp Hill since the latter part of March, 1882; before that I lived on a farm south of Oyster's Point and Camp Hill.

Q. 3. How long did you live on that farm; and how long did you and your family own it?

Ans. I have lived on it since 1836—lived with my father, and then afterwards owned it myself.

Q. 4. How far from Mr. Daniel Drawbaugh's shop, at Milltown, was your farm?

Ans. It is about a mile and a half.

Q. 5. How far is it by the road?

Ans. That was across the fields. By the road, I judge, you would have to go a mile further.

Q. 6. About how long have you known Mr. Daniel Drawbaugh?

Ans. I couldn't say—I have known him for thirty-five years, at any rate.

Q. 7. Do you remember the house he used to live in and the shop he used to occupy just back of the grist-mill before he moved to his present shop, and do you remember going there to have any work done; if so, mention some work you had done there?

Ans. I remember of him living there, and having his shop there, and doing some work for me. He fixed a threshing machine for me—put in new boxes and balanced the cylinder. About any more I don't remember.

Q. 8. Do you remember the faucet company carrying on business at his shop; and if so, won't you mention some of the people who belonged to it?

Ans. Yes; I remember the faucet company. The parties were Mr. Hertzler, one or two of the Gorgases. I think there were two Hurshes; Henry S. Rupp, I think, belonged to it. All I know is hearsay about those parties. Daniel Drawbaugh also belonged to it.

Q. 9. Daniel Drawbaugh, in his testimony on page 934 of respondent's printed record, speaks of the mill-bush company, and says that Daniel Rupp, he thinks, was manager; William Sadler was one, and John F. Teahl, and one or two others whom he did not remember. Are you the Mr. William Sadler there referred to, and did you belong to the mill-bush company?

Ans. Yes, sir.

Q. 10. Under whose patent did your company manufacture those bushes?

Ans. Under Teahl's.

Q. 11. Look at the patent which I now show you, and say whether it is the patent under which they were made, so far as you recollect.

Ans. Yes, sir; that is the patent.

[*The patent is a patent to John H. Teahl, of Eberly's Mills, Penna., No.* 64,809, *dated May* 14, 1867.]

Q. 12. Who were the other members of the company?

Ans. Mr. Daniel Rupp, of Shiremanstown; Mr. Thomas Bergner, Mr. Teahl—I can't get at the other man's name—Mr. Lambert, and myself.

Q. 13. Mr. Drawbaugh don't seem to remember the names of Mr. Bergner and Mr. Lambert. Did those gentlemen take any active part in the business of the company, or in going to Mr. Drawbaugh's shop about it, so far as you know?

Ans. They took part in the meetings. I don't know as to them ever going to Mr. Drawbaugh's shop about it.

Q. 14. Mr. Drawbaugh, on page 934, says that your bushes were made by the Drawbaugh Manufacturing Company, and on page 933 he says that he devised and made drawings for a number of machines for your company, and that these machines were made for your company by the Drawbaugh Manufacturing Company. He names among them a roller-machine, a slotting-machine, a machine for punching out round

rings from raw hide, and a machine for boring out mill-bushes. Is this according to your recollection?

Ans. Yes, sir.

Q. 15. Did the Drawbaugh Manufacturing Company make at their shop a number of machines for your company for manufacturing mill-bushes?

Ans. Yes, sir.

Q. 16. Mr. William Luther Gorgas testified, on page 686 of respondents' printed record, that some of this work was charged in the year 1868. Can you tell me about when your mill-bush company began to get work done at Drawbaugh's shop, and over how long a period your work there extended?

Ans. We began to get work done in 1868. Some time about June, I should judge. It extended till some time in 1869.

Q. 17. Which of your company, and how many of your company, used to be in the habit of going down to the shop to look after this work while it was going on?

Ans. Mr. Teahl, Mr. Rupp and myself.

Q. 18. Which of the three lived nearest to the shop and which furthest from it?

Ans. Mr. Teahl lived nearest to the shop at his mill just below Milltown—Etter & Shanklin's at the present time. Mr. Rupp at Shiremanstown lived furthest away.

Q. 19. When you first went to the Drawbaugh company did you go there with the intention of having them get up mill-bush machinery, or did you go there with the intention of having them get up mill-bushes with their own machinery?

Ans. We expected them to fix our mill-bushes with their own machinery.

Q. 20. When you would go down there from time to time to inquire about your work and see how it was getting on, who would you go to see about it and talked to about it?

Ans. Daniel Drawbaugh, when he was there.

Q. 21. Did you generally find him there or not?

Ans. Yes, sir.

Q. 22. Did you ever go upstairs into his office room to see him about your work?

Ans. I have been in his office room; whether I went there to see him about our work or not I can't say; it is quite likely I did.

Q. 23. About how much money did your company pay the Drawbaugh company for the work they did for you?

Ans. About nine or ten hundred dollars, as near as I can recollect.

Q. 24. About how much money did your millbush company raise in all, for the purpose of carrying on its operations?

Ans. Over fifteen hundred dollars.

Q. 25. How was it raised, and who raised it?

Ans. We raised part of it by assessment; the balance Mr. Rupp and myself put our joint note into bank for, and got it discounted.

Q. 26. Did you have a son named Jacob M. Sadler, and when did he die?

Ans. I had; he died in December, 1880.

Q. 27. Was he interested at any time with Mr. Daniel Drawbaugh, in putting up water-rams that Mr. Drawbaugh made; and if so, when was it, as near as you can recollect?

Ans. Yes, sir, he was; it was in the spring of 1871 or 1872; I don't recollect which of the two springs it was.

Q. 28. Who furnished the money for that enterprise?

Ans. I furnished part of it, at any rate.

Q. 29. What did you furnish for it in money and other things?

Ans. I furnished them the running part of a wagon, and about a hundred and seventy dollars—I indorsed for my son, and the note was discounted.

Q. 30. Was it a wagon of your own, or did you buy it for the purpose, and how much did you spend on it?

Ans. I bought the wagon, and paid sixty dollars for it; and then some repairing was done to it; but I don't know how much.

Q. 31. What part of the repairing did you have done and pay for?

Ans. It was done at Shiremanstown, at Stoner's blacksmith shop; what all he done at it I don't remember; the repairs were on the running gear.

Q. 32. Was there a new box or body put to it, and where was that done?

Ans. Yes, sir; at Milltown. I think the Drawbaughs did it.

Q. 33. While that work was preparing, and while your son and Mr. Drawbaugh were carrying on the ram business together, where did your son Jacob live?

Ans. He lived at home, with myself.

Q. 34. Will you mention the next considerable matter of business

that brought you in contact with Mr. Drawbaugh? State when it was, and what it was.

Ans. It was the latter part of June, in 1876; he repaired the truck of a reaper for me.

Q. 35. I think you mentioned to me something about a steamer that you put in, and that Mr. Drawbaugh had something to do with; what was that?

Ans. I had bought a feed steamer, in 1872; Drawbaugh put in the pipe to convey the steam from the steamer to the feed-chest, and he put steam-cocks into the pipe.

Q. 36. About how much of a job was that—how much piping did it take?

Ans. Perhaps about seventy or seventy-five feet.

Q. 37. Did you have to go to his shop about that work?

Ans. Yes, sir.

Q. 38. Did you also have to go there about repairs to it, or alterations, or additions to the piping and steam-cocks after you had got it started?

Ans. Yes, sir.

Q. 39. How much have you been to his shop since you got your reaper repaired there in the summer of 1876?

Ans. I don't remember of being in his shop since then.

Q. 40. Between the beginning of 1868 and the summer of 1876 were you in his shop at other times besides the occasions when you were there on the particular pieces of business you have mentioned?

Ans. Yes, sir.

Q. 41. Do you remember of ever seeing them make patent axles there; and if so, whom do you remember of ever seeing working on them, there?

Ans. I saw Mr. Kline working on it.

Q. 42. Was there a company making those patent axles there; and if so, tell me if you know who composed the company, and when they chiefly carried on their business there?

Ans. There was a company—J. A. Moore, Jacob Kline, Wilson Bear, and a man by the name of Grove; it was in 1875 when I saw Kline working there.

Q. 43. Did Mr. Drawbaugh ever show you a machine which he told you was a talking-machine, by which a person could talk through a wire from one place to another?

Ans. No, sir.

Q. 44. Did he ever tell you that he had a talking-machine by which

a person could talk through a wire from one place to another, or from one room to another?

Ans. No, sir.

Q. 45. Did you ever hear from anybody, before the year 1880, that Mr. Drawbaugh had a talking-machine, or a machine by which he could talk through a wire from one room to another, or from one house to another?

Ans. I don't remember that I did.

Q. 46. Has Mr. Daniel Drawbaugh, at any time, spoken to you on the subject of talking-machines or telephones; and if so, when was it first, and what did he say to you about it?

Ans. I never heard him speak about his telephone until he came to my house and spoke to me about it, in 1880 I think it was. He came there to see whether I knew anything about it; I rather think, to ask me whether I had ever saw it, or he had ever said anything to me about it; I am not certain whether it was in 1880 or 1881; and I think they asked me, too, whether my son had said anything.

Q. 47. What reply did you make to those inquiries?

Ans. That I hadn't saw them; that I knew nothing about it; I am speaking of myself. I don't exactly remember what reply I made as to whether my son had said anything.

Q. 48. Do you know whether they applied to your son about the same time for information on the subject?

Ans. The only thing I ever heard him say about it was at the dinner table; the family were talking about it—somewheres in the fall of 1880, I think it was—in the conversation at the table some one asked him whether he ever heard about Drawbaugh's telephone, or rather about the suit, or claim to the patent; he made answer that he had, but that he didn't think it amounted to much; that is all I ever heard him say about it.

[*Mr. Jacob Sadler's opinion objected to by Mr. Hill, as not competent.*]

Q. 49. Have any of the Drawbaugh family been to see you since that about this suit; and if so, who was it, and when was it, and what did he say to you on the subject?

[*Objected to by Mr. Hill, as not rebutting and as hearsay, and incompetent, no foundation having been laid for introducing the unsworn statements of the Drawbaugh family.*]

Ans. George Drawbaugh was to see me last Tuesday at my place at Camp Hill; he asked me if I was subpœnad to come here; I told him not; he then further asked me whether his uncle had ever talked to me about his telephone while he was making it, or ever showed it to me; I told him that he hadn't.

Q. 50. Did he say anything to you as to whether he had come to you of his own idea, or whether somebody had sent him; if so, who did he say had sent him?

[*Same objection.*]

Ans. His uncle.

Q. 51. Do you remember when it was that you first saw a speaking telephone of any kind, and where it was, and who showed it to you?

Ans. The first I ever saw I saw at the alms-house of Cumberland county while I was county commissioner. We had some business—the commissioners—at the alms-house and went there. I think we met the directors of the poor there. The steward showed it to me and I heard through it.

Q. 52. Do you know whether it was a string telephone or an electric telephone?

Ans. It was a string telephone, or at least it looked to be a string.

Q. 53. Do you remember how you first heard of speaking telephones or know that there were such things?

Ans. Through the newspapers.

Q. 54. Do you know a man named Simon Oyster who lives down somewhere near New Cumberland?

Ans. I know Simon K. Oyster, living in New Cumberland. He is the only one of that name living on the Cumberland side of the river.

Q. 55. Is he a connection of Mr. Daniel Drawbaugh; and if so, what?

Ans. I will tell you how I understand it is, and you may make out of it what you have a mind to. Mr. Oyster is married to a daughter of David Oyster. David Oyster's wife was a Drawbaugh. I am not sure what relation she was to Mr. Daniel Drawbaugh. I am not certain whether she was a sister of his or a niece.

Q. 56. Is Mr. Simon Oyster a man of means at the present time?

Ans. Yes, sir; so reputed.

Q. 57. Where did he get his property from?

Ans. His father, at his death.

Q. 58. About how much property was his father reported to have left?

Ans. I have heard it stated from $75,000 to $150,000. I have generally supposed it was about a hundred thousand.

Q. 59. How many children did he leave?

Ans. Two.

Q. 60. What was his father's name?

Ans. Charles.

Q. 61. I show you a certified copy from the probate records of Cumberland county of an affidavit of Margaret Oyster, stating that Charles Oyster, late of New Cumberland, died Monday, February 7, 1876. Is that the Charles Oyster, father of Simon, of whom you have spoken?

Ans. Yes, sir.

[*Certified copy referred to in the above question offered in evidence by Mr. Storrow.*]

Q. 62. Mr. Orlando Kahney has testified here within a few days. Did he regularly live with you and work for you at any time; and if so, about what years?

Ans. He worked for me by the month in 1876, from some time in May—about the 17th or 19th. He worked for me in the following year, 1877; helped me to hay and harvest, and hauled out manure, and husked corn; this was by the day, except the corn-husking, which was by the shuck. He was with me in 1878, from some time in the latter part of March until fall, by the month. From that until March, 1879, he was still with us, through the winter, but not by the month; he was helping to feed the stock for his board. He has worked a great deal for me before 1876, but none since the spring of 1879; this was by the day and job.

Q. 63. Do you know of his working for a neighbor of yours, named Bates, in 1877, and how he came to be there?

Ans. Yes, sir; Bates' hired man left him about harvest time—whether it was in harvest, I don't remember. Kahney was working for me, loading manure. Bates wanted a hand, and I advised him to go there.

Adjourned until January 6, 1883, at 10, A. M.

JANUARY 6, 1883, 10, A. M.

Examination resumed, pursuant to adjournment.

Present, same counsel.

Examination of William Sadler, by Mr. Storrow, continued:

Q. 64. Did any other of Orlando Kahney's family work for you?

Ans. Yes, sir.

Q. 65. State which ones, and whether they stayed with you, or worked day's work.

Ans. His father worked for me, and Ira and Norman; they worked day's work and job work.

Q. 66. Is there more than one William Sadler in Cumberland county, and where does the other one live, if there are two?

Ans. There was; I had a nephew by the name of William, who has been dead about four years; I think it is a little more, but I am not certain; it is in that neighborhood.

Q. 67. Do you know John Sheely, of Lower Allen?

Ans. Yes, sir

Q. 68. Was he one of the members of the faucet company, and where does he live now?

Ans. I think he was; he lives on the Gettysburg road, about four or five miles from Bridgeport, in Lower Allen township.

Q. 69. One of the respondent's witnesses was James Brooks, who testified, on page 43, respondent's printed record, that he was sixty eight years old, lived at Shiremanstown, was a mill-wright by trade, and was working for the Harrisburg Car Company a year or two ago; do you know the man?

Ans. Yes, sir.

Q. 70. Did he formerly work for the faucet company at Drawbaugh's shop?

Ans. I remember of seeing him there at work when we had the mill-bush in 1868.

Q. 71. Do you remember reading about the speaking telephone when it came prominently before the public through the papers and was getting into use, along in 1877 and subsequently?

Ans. Yes, sir.

Q. 72. When you first read of the speaking telephone in the newspapers along about that time, did it strike you as a new thing or as something that you had heard of long before at Mr. Drawbaugh's shop?

Ans. It struck me as a new thing that I had never heard of before.

Q. 73. Do you think that Mr. Drawbaugh could have had speaking telephones at his shop from 1867 to 1876, and been in the habit of showing them to people generally who came in, and communicating knowledge of them freely to the public during those years, without your knowing it?

[*Objected to by Mr. Hill, as incompetent and hearsay.*]

Ans. No, sir.

Q. 74. If, after you had been reading of telephones in the papers for a year or two, you had heard that Mr. Drawbaugh or any one else had speaking telephone at their place, would it or would it not have made the same impression on your mind as if you had heard of their having one years before they were ever mentioned in the papers or elsewhere?

[*Objected to by Mr. Hill, as incompetent, immaterial, and leading.*]

Ans. It would not.

Cross-examined by Mr. Hill:

Cross-Q. 75. And it would not on anybody's mind under such circumstances, would it?

Ans. I don't think it would.

Cross-Q. 76. When Daniel Drawbaugh went to you in 1880 or 1881, as referred to in your 46th answer, and inquired if you knew anything about his telephone, or had ever seen it, or he had ever said anything to you about it, did you tell him no, or did you tell him that you were in doubt about it, and wanted time to reflect and think over the matter before being positive yourself about it?

Ans. I told him no.

Cross-Q. 77. And didn't you express any doubt about it—I mean as to whether you had any impression or recollection about it or not?

Ans. I didn't express any doubt to him that I remember of.

Cross-Q. 78. Was anybody with him when he called on you?

Ans. Yes, sir.

Cross-Q. 79. Who was it?

Ans. He was a stranger to me. Mr. Drawbaugh introduced him as Mr. Jacobs.

Cross-Q. 80. Did Mr. Drawbaugh ever come to see you afterwards about the matter?

Ans. No, sir.

Cross-Q. 81. Did Mr. John C. Comfort ever come to see you on behalf of the complainants about the matter?

Ans. Yes, sir.

Cross-Q. 82. How often?

Ans. He was there twice that I thought he came on that purpose.

Cross-Q. 83. Since I propounded the 76th and 77th cross-questions, Mr. M. W. Jacobs, one of the respondents' counsel, has come into the room. Is he the gentleman to whom you refer as calling with Mr. Drawbaugh?

Ans. I am not so certain about that. It strikes me it was a stouter gentleman than that. He may be the same gentleman, though.

Cross-Q. 84. Mr. Jacobs tells me that he called on you once with Daniel Drawbaugh to ascertain what you knew about the telephone, but more especially to fix the date of the wagon which was provided by you for your son and Daniel Drawbaugh when engaged in the ram business. I suppose you have no recollection of Mr. Drawbaugh and a Mr. Jacobs calling on you but once; have you?

Ans. I have no recollection of such a call but once.

Cross-Q. 85. At Mr. Jacobs' suggestion I ask you whether you did not, at that interview, tell Mr. Jacobs and Mr. Drawbaugh that you did not remember whether you had or had not seen Mr. Drawbaugh's talking-machine, but you would think over the matter and would see Mr. Drawbaugh again and would let him know whether, after thinking over it, you remembered anything about it?

Ans. As to the talking-machine? No.

Cross-Q. 86. Was it about the wagon that you made that remark?

Ans. Yes, sir.

Cross-Q. 87. And since thinking it over you have cleared up your recollection about the wagon; have you?

Ans. I got it in 1871 or 1872. Which of the two dates I am not certain. I think it was in 1872.

Cross-Q. 88. What makes you think it was in 1872 rather than 1871?

Ans. I bought my steam-feeder in 1872, and we used some of the pipe that they had furnished for the ram.

Cross-Q. 89. Have you any paper or memorandum to fix the date of the steam-feeder, or do you rely simply on your memory for it?

Ans. The day I bought or engaged the feeder I was engaged in making a road to the cemetery, and the books of the cemetery show that it was that year that we made that road. I referred to the books for that

date some time ago—not a year, but very near it—not on this business, but on some other.

Cross-Q. 90. Your son and Mr. Drawbaugh were engaged in the ram business before you bought the steam-feeder, were they not?

Ans. Yes, sir.

Cross-Q. 91. Was not the wagon provided for them before they actually entered upon the business of making and selling rams, and as a matter of preparation for that business?

Ans. Yes, sir; a short time; that is, before they actually done any business, I mean.

Cross-Q. 92. From whom did you buy the steam feeder?

Ans. From Engle and Company, Lancaster, or from one of their agents, whose name I don't remember.

Cross-Q. 93. What is your recollection as to the length of time that your son and Mr. Drawbaugh had been in the ram business together before you bought the steam-feeder?

Ans. I am not certain whether it was 1871 or 1872 that they were in business; in the fall of 1872 we put up the steamer.

Cross-Q. 94. Then all that you can say is that some of the pipe that had been provided for the ram business was afterwards used in putting up the steamer; is it?

Ans. To the best of my knowledge it is—it was to be.

Cross-Q. 95. Do you know whether Mr. Drawbaugh furnished any of the capital for the ram business, or whether your son furnished it all?

Ans. I don't know of him furnishing any capital unless it was in the building the box or bed on that wagon.

Cross-Q. 96. Do you know how much capital your son furnished?

Ans. As near as I can tell there was a note discounted for about $170; I am not positive as to the exact amount; and then there was the running part of the wagon, which cost $60; and the repairs at Stoner's, of which I don't remember the amount; they used my horses generally.

Cross-Q. 97. In the prosecution of that ram business I suppose Mr. Drawbaugh made the rams and your son attended to the selling and delivering of them, and so forth; is that your recollection?

Ans. My recollection is that Mr. Drawbaugh was to make the rams, and, between them, they would sell them and put them up; my son wasn't capable of putting them up.

Cross-Q. 98. You have testified that Simon K. Oyster married a relative of Daniel Drawbaugh; when did he marry her?

Ans. I don't recollect the year.

Cross-Q. 99. Was it not about 1879 or 1880?

Ans. Indeed I can't answer that.

Cross-Q. 100. You have also testified that the father of Simon K. Oyster left a large property; did he not, during his lifetime, have the general reputation around in the community where he lived, of being a very close, tight-fisted man in pecuniary matters?

Ans. I hardly know how to answer that; if I can answer it two ways, I can answer it. Among some parties, he had that reputation; but among those who knew him best he had not.

Cross-Q. 101. Was that not his general reputation in the community?

Ans. I think not, to my knowledge.

Cross-Q. 102. Do you know whether Daniel Drawbaugh was acquainted with him, or not?

Ans. I suppose he was; I can answer that, yes.

Cross-Q. 103. You have mentioned two classes in the community, to wit: a class that considered him a close, tight-fisted man, and a class that did not. Do you know in which class Daniel Drawbaugh was?

Ans. No, sir.

Cross-Q. 104. Was your son, Jacob M. Sadler, a married man?

Ans. No, sir.

Cross-Q. 105. Where did he make his home from 1867 until the time of his death?

Ans. His home was with my family, with the exception of about a year, when he was in the bakery at New Cumberland—that was just about the year before he died. He was always at home, and paid his taxes at home, and voted, and claimed that as his residence, until the last year, when he paid them at New Cumberland; that is why I say he resided there one year, although he was in the bakery business there more than a year, during which time he used to get home several times a week; he used to pass home when driving the baker's wagon, and would stop in. In this time, he was several times west, and was once in Baltimore for a while; these were short times, and then he would come home; he was also engaged in several businesses during that period.

Cross-Q. 106. How long was he connected with the bakery business in New Cumberland?

Ans. About two years. I am not certain whether it was two years or over two years.

Cross-Q. 107. Do you know what your son's opportunities were for seeing Mr. Drawbaugh's talking-machines, or knowing about them after he went out of the ram business, and from that time down to the time of his death?

Ans. While in the bakery business, according to his books, he sold bread to Mr. Drawbaugh's family and other families in the place. That is all I know, further than that his opportunities would be the same as those of any other young man living in our neighborhood.

Cross-Q. 108. His business of selling bread would take him to Mr. Drawbaugh's house and not to his shop; would it not?

Ans. Yes, sir.

Cross-Q. 109. Your son was a lame man, was he not?

Ans. Yes, sir.

Cross-Q. 110. While he was engaged in the ram business with Mr. Drawbaugh about 1871, would you say that he had good opportunities for seeing and knowing of Mr. Drawbaugh's talking-machine, if it existed at that time?

Ans. I would suppose so.

Cross-Q. 111. State whether you have any recollection of ever hearing your son speak of Mr. Drawbaugh's talking-machine, along about 1871, or soon after that

Ans. No, sir.

Cross-Q. 112. What reason have you for supposing that he would have mentioned it in your presence, if he had seen or known of it at that time?

Ans. Being something new, and not heard of before, I would think he would have been very likely to speak of it.

Cross-Q. 113. If it should turn out that he did know of the talking-machine in 1871, then I should suppose that you must have also heard of it about that time, and have forgotten the fact; what would you think about that?

Ans. I don't think I could have forgotten that.

Cross-Q. 114. You testified in your examination-in-chief, as to a conversation with your son at the dinner table, you think in the fall of 1880, in which conversation some one asked him whether he had ever heard about Drawbaugh's telephone, or rather about the suit or claim to the patent, and he made answer that he had; did you understand him as meaning that he had seen Drawbaugh's telephone or talking-machine?

Ans. No, sir.

Cross-Q. 115. What did you understand him as meaning?

Ans. I understood him to mean that there wasn't much in it—in the patent, I mean—although he said no more about it; that was just my impression at the time.

Cross-Q. 116. Can you give the conversation in full in the words in which it occurred?

Ans. No, sir; I can't.

Cross-Q. 117. Then I suppose you don't recollect the entire conversation as it occurred?

Ans. No, sir; not the entire conversation.

Cross-Q. 118. I have understood that your son was a fine young man, reliable and truthful; do you believe my information to be correct?

Ans. Yes, sir.

Cross-Q. 119. I hold in my hand an affidavit made by your son on the 30th day of June, 1880, which reads as follows:

"*Cumberland county, ss:*

"Before me the subscriber a justice of the peace in and for said "county personally appeared Jacob M. Sadler, who being duly affirmed "says; In the year 1871 I was engaged with Daniel Drawbaugh in the "manufacture and sale of hydraulic-rams. At that time, to the best of "my recollection, he spoke to me about his talking-machine. He showed "it to me but I do not remember what it was like; I know there were "two machines connected by wires. He spoke through it to me and I "understood distinctly the words he said. I repeated to him the words "he spoke and he said they were right. I recognized the voice as his; "it sounded like his—I remember that distinctly. He said his invention "would take the place of telegraphing and that it could be used to speak "at long distances.

"In the manufacture of the hydraulic rams I furnished the capital "and Drawbaugh made them. He was poor at that time and generally "hard up.

J. M. Sadler.

"Affirmed and subscribed before me this 30th day of June, 1880.

"Jno. F. Lee, J. P."

The paper is sealed with a seal bearing this inscription: "John F. Lee, Justice of the Peace, New Cumb'd Cumb'd Co. Pa."

Please look at the signature of the paper and see if you recognize it as the signature of your son.

[*Mr. Storrow objects to the attempt to put an ex parte affidavit into the record.*

Respondents' counsel states, that for the practice of putting ex parte affidavits upon the record he already has the eminent au-

thority of complainants' counsel, and that this affidavit is directly relevant to the examination-in-chief of this witness, in which even unsworn statements of Jacob M. Sadler were put in evidence, and that, too, when only partially remembered; and that as Mr. Jacob M. Sadler is dead, the only way for respondents' counsel to get at the real facts concerning his knowledge, is to introduce his authenticated and sworn statements made during his lifetime.]

Ans. I wouldn't like to do it; he was generally a better penman than that; it bears some resemblance to it.

Cross-Q. 120. Then you couldn't say whether it is or is not his signature, if I understand you.

Ans. I couldn't say that it was his signature.

Cross-Q. 121. And you couldn't say that it is not his signature; could you?

Ans. I couldn't say that, either; I don't recollect of ever seeing him write his name in that style.

Cross-Q. 122. But you say that the hand-writing of the signature "J. M. Sadler," resembles your son's hand-writing.

Ans. Has some resemblance to it.

Cross-Q. 123. Do you know the hand-writing of Squire John F. Lee, of New Cumberland, Cumberland county?

Ans. I have saw his hand-writing, but not enough to recognize it at the present time.

Cross-Q. 124. Then you couldn't say whether the signature "Jno. F. Lee," is his signature or not.

Ans. I couldn't say whether it is his signature or not.

[*Respondents' counsel requests the examiner to mark the paper for identification, and to note on the record how he marks it.*

The examiner marks the paper "J. M. Sadler's affidavit, Fred. M. Ott, Examiner, Jan. 6, 1883."]

Recess for lunch until 2.30, P. M.

JANUARY 6, 1883, 2.30, P. M.

Examination resumed, pursuant to adjournment.

Present, same counsel.

Cross-examination of William Sadler, by Mr. Hill, continued:

Cross-Q. 125. You have testified in answer 41 that you saw Mr.

Kline working on patent axles at Drawbaugh's shop. When was that?

Ans. Some time during 1875. I think in the fall of 1875.

Cross-Q. 126. What took you there then?

Ans. I don't remember. I went to the mill at Milltown, and why I went down below I don't remember. I went down afoot, leaving my team at the mill.

Cross-Q. 127. How long were you at the shop on that visit?

Ans. I don't remember—not long.

Cross-Q. 128. Were you on the upper floor of the shop or only on the first floor at that time?

Ans. I was on the second story, counting the basement as a story.

Cross-Q. 129. There was another story above that; was there not?

Ans. Yes, sir.

Cross-Q. 130. Do you remember whether you saw Daniel Drawbaugh at that visit or not?

Ans. I don't remember of seeing Mr. Drawbaugh.

Cross-Q. 131, Were you acquainted with Mr. Grove, one of the members of that axle company, and who has testified as a witness for the respondents in this case?

Ans. No, sir.

Cross-Q. 132. You have testified in answer 34 that in the latter part of June, 1876, Mr. Drawbaugh repaired the truck of a reaper for you. How do you fix the date?

Ans. I fix the date by the crops that we worked at that season and the season following, and by the men who worked for me.

Cross-Q. 133. Tell us all about those matters—the crops and the men.

Ans. I had grass at the west end of the farm. We made the hay off, perhaps, two thirds of the field. The other third was all timothy. The wheat crop ripened very suddenly that year. I quit cutting grass and left the timothy stand. I took the machine into the wheat field, at the barn, to put the platform on for reaping grain—it was a combined mower and reaper—then I found that there were several of the boxes that were either worn out or broken. We had taken the hay in that had been cut, with the exception of, perhaps, a load. On the following morning we loaded the reaper truck on a board wagon. I took it down to Mr. Drawbaugh's to get it repaired, and the hands were to open the wheat field; that is, to get at it and cut around it so we could get in with a reaper, and would take in the balance of the hay while I was away; that was that year. The next year, 1877, I had corn in the field where the hay was.

Orlando Kahney was hired with me in 1876, the first year. Joseph Howbecker helped me to harvest that same year. There were one or two more that helped me, but I am not so certain about the others. In 1877 they both helped me, but Howbecker was working by the month with me, and Kahney by the day. As I stated before, I had grass in the field in 1877, where we cut the wheat in 1876; and in 1877 we had the wheat in the east end of the farm.

Cross-Q. 134. That was about your busiest season of the year, then, when you took the harvester down to Mr. Drawbaugh's.

Ans. Yes, sir.

Cross-Q. 135. And as you needed the harvester right off for your work, I suppose you hurried up the job at Mr. Drawbaugh's as fast as you could; did you not?

Ans. Yes, sir.

Cross-Q. 136. Did you remain with the harvester until he finished it, or did you leave it and return home, and afterwards go for it?

Ans. I remained with it and visited him in the work of fixing it.

Cross-Q. 137. How long did it take to fix it?

Ans. It was noon when I got home; I had left in the morning as soon as I could get ready. It took us probably about three hours.

Cross-Q. 138. Did he do the work in the machine-shop or in the blacksmith-shop outside?

Ans. We had the truck between the two; we were sometimes in the machine-shop and sometimes in the blacksmith-shop.

Cross-Q. 139. Do you recollect of ever going to Mr. Drawbaugh's shop with Orlando Kahney, and of introducing Mr. Drawbaugh and Orlando Kahney?

Ans. No, sir.

Cross-Q. 140. You have testified that Mr. John C. Comfort had been to see you on behalf of complainants in that case. How often has he been to see you about the case?

Ans. Twice.

Cross-Q. 141. When were those two occasions?

Ans. On Sunday evening last and on Tuesday evening last.

Cross-Q. 142. How long did you converse with him about the case?

Ans. He was there probably an hour, and we conversed about the case probably half the time.

Cross-Q. 143. Wasn't he there about two hours on Sunday evening?

Ans. I don't think he was.

Croes-Q. 144. Haven't you told anybody that he was?

Ans. Two hours? No, sir.

Cross-Q. 146. Is that the same John C. Comfort, who, within the last year or two, has been twice tried in Cumberland county, on indictment for forgery or fraud?

Ans. Yes, sir.

Redirect by Mr. Storrow:

Q. Q. 146. Did your son and Mr. Drawbaugh carry on a ram business together the same year when the wagon was bought, or did they carry it on the following year?

Ans. The same year.

Q. Q. 147. There has been read to you a paper which is alleged to be an affidavit signed by your son. We do not know under what circumstances the paper was prepared, nor what time or opportunity was given your son to ascertain the date of the transmission of speech which is there mentioned. In view of these and other facts I ask you whether you are, or are not, still of the opinion that if your son had seen and talked through a talking-machine at Mr. Drawbaugh's shop in 1871, he would have mentioned it to you at home?

Ans. Yes, sir; I am.

Q. Q. 148. I ask you whether, before you had read of speaking telephones in the newspapers in 1877, or thereabouts, you had ever heard that Mr. Drawbaugh had a speaking telephone at Eberlys Mill's?

Ans. No, sir.

Q. Q. 149. I ask you whether, when you first read of the speaking telephone in the newspapers, you were impressed by it as something new, or as something which you had already heard of a number of years before?

Ans. As something which I had never heard of before.

Examination taken, reduced to writing, and by the witness affirmed and subscribed to before me, this 6th day of January, 1883.

FRED. M. OTT,
Examiner.

WILLIAM SADLER.

Adjourned until Monday, January 8, 1883.

JANUARY 8, 1883, 10, A. M.

Examination resumed pursuant to adjournment.

Present, Mr. Storrow for complainants, and Mr. Hill for respondents.

[*Complainant's counsel calls the attention of the court to a publication concerning this case, in the Philadelphia Press of this morning, Monday, January 8, 1883, which contains allusions to and misstatements of events which occurred in the examining room on Thursday, Friday, and Saturday last, and expresses a hope that the respondents will desist from making such publications and furnishing materials therefor.*

Respondents' counsel, Mr. Hill, states that since the adjournment of Saturday he was interviewed by a reporter of the Press, who informed him that he understood the case was going on, and wished for some facts regarding its condition and progress for publication. Respondents' counsel declined at first to make any statement, and referred him to the examiner for the facts, but finally consented to give him such facts as were uncontroverted, and to state to him the respondents' theory of the case, or rather the nature of the defense upon which the respondents relied; upon examining the article in the Press this morning, respondents' counsel finds a great many errors and inaccuracies in the article, subsequently prepared by the reporter, and which article counsel had not seen prior to its publication.]

JOHN F. HURSH, *being produced, affirmed, and examined, saith:*

Examined by Mr. Storrow:

My age is fifty-four; residence, Pawnee county, Kansas; occupation, farming and stock raising.

Q. 1. When did you go west?

Ans. In 1879, in November.

Q. 2. Had you been west before that at all within a few years?

Ans. Yes, sir; in 1878, in August and November—twice in that year.

Q. 3. How long were you gone—about—each time?

Ans. About three weeks each time.

Q. 4. Before you moved west in November, 1879, where did you live?

Ans. In Fairview township, York county, Pennsylvania.

Q. 5. Did you have a farm there?

Ans. Yes, sir.

Q. 6. Was your farm on the banks of the Yellow Breeches; and if so, was it above or below Milltown?

Ans. Yes, sir; below.

Q. 7. Then it was between Milltown and New Cumberland; was it?

Ans. Yes, sir, though not direct.

Q. 8. Are you the Mr. John F. Hursh who has been named as one of the members of the Drawbaugh Pump Company or Drawbaugh Manufacturing Company that made the Drawbaugh faucets and other things at the machine shop, at Milltown, twelve or fourteen years ago?

Ans. Yes, sir.

Q. 9. Please state whether you became connected with that company at its origin, and in what year it was, and about when it ceased manufacturing?

Ans. Yes, sir; in 1867, and ceased in 1871.

Q. 10. It has appeared in evidence that in the summer of 1873 that company sold all its property to David A. Hauck and others, paid its remaining debts, and divided among its members what money was left over; is that according to your recollection?

Ans. Yes, sir.

Q. 11. How much money, if you remember, did you pay as your share of the original purchase of the patent rights from Mr. Drawbaugh?

Ans. One thousand dollars.

Q. 12. How much money did you subsequently pay as the assessments on your share to furnish capital to carry on the business of the company?

[*Respondents' counsel inquires if all these things do not already appear upon the books of the Drawbaugh Manufacturing Company, which are in the hands of complainants' counsel, and extracts from which have from time to time been put in evidence.*

Complainants' counsel replies that they do, but he prefers to have some of the matters briefly restated in this connection.]

Ans. Over two thousand dollars.

Q. 13. While that company was carrying on its manufacturing business at the machine shop in Milltown, from 1867 to 1871, did you visit the shop, and if so, give me some idea of about how often?

Ans. Yes, sir; at intervals of two weeks and longer.

Q. 14. Would you or would you not generally see Mr. Drawbaugh when you visited the shop?

Ans. Yes, sir.

Q. 15. Were your visits to the shop confined to any particular part of the building, or did you go over the different parts of the building—the two principal floors?

Ans. No, sir. I went over the two principal floors.

Q. 16. It has appeared that Mr. Drawbaugh had a small room or office where he did draughting, and some other work, in the north-east corner of the building, that is, in the end towards the village of Milltown; do you remember that room?

Ans. Yes, sir.

Q. 17. Did you ever go in there and see Mr. Drawbaugh in there or not?

Ans. I did.

Q. 18. Do you know of the Kline patent axle?

Ans. Yes, sir.

Q. 19. Did you ever see any of them at Mr. Drawbaugh's shop?

Ans. Yes, sir.

Q. 20. Did you ever get a ram from Mr. Drawbaugh to put on your farm; and if so, about when was it?

Ans. Yes, sir; about Centennial year.

Q. 21. I forgot to ask you how many years you lived on that farm; how many was it?

Ans. I lived there from 1828 to 1879.

Q. 22. Who put up this ram on your farm and laid the pipe, put in the stop-cocks, etc.?

Ans. Dan Drawbaugh.

Q. 23. After you first put it in did you have to make changes about the ram or piping or repairs?

Ans. Yes, sir.

Q. 24. Who did this work for you?

Ans. Drawbaugh principally.

Q. 25. When you had occasion to have him come to your place for any of this work about the ram, how would he generally get back and forward?

Ans. By my taking him to and fro.

Q. 26. Do you remember what it originally cost you to put in the ram; and if so, how much?

Ans. Some over $60.

Q. 27. Between the time when the faucet company stopped active

operations in 1871, and the time when you got the ram, were you at Mr. Drawbaugh's shop; and if so, give me an idea of about how much.

Ans. Yes, sir; probably at intervals of six months and a year.

Q. 28. After you got the ram I understand you to say that you were there several times about alterations and repairs; do you remember whether you were in there for any other purpose—as for instance, making a call—between the time when you got the ram and the time when you moved west?

Ans. No, sir; I don't remember.

Q. 29. Do you remember what part of the Centennial year it was that you put in the ram?

Ans. In or about May.

Q. 30. As you met Mr. Drawbaugh at his shop from time to time, did he ever speak to you about any of the inventions or machines that he was getting up or had gotten up?

Ans. Yes, sir.

Q. 31. Did he seem averse to speaking to you about such things, or did he seem pleased to do it?

[*Objected to by Mr. Hill, as incompetent.*]

Ans. No, sir; he seemed pleased to talk about his new inventions.

Q. 32. Will you name some of the inventions that he spoke to you of from time to time outside of the talking-machine?

Ans. Yes, sir; the nail-machine was one; the different clocks, gas-governor, tram, alarms—fire and burglar—the barometer or weather indicator; there was some others that I don't bear in mind; also a printing telegraph.

Q. 33. What kind of a thing was the barometer; was it a mercury barometer like the ordinary ones, or what was it?

Ans. No, sir; if was, if I understand it right, a vegetable substance.

Q. 34. Tell me what you remember about the printing telegraph, what kind of a thing it was, and how it made or was to make the letters?

Ans. I can't give it minutely; it worked in a to-and-fro motion, and finished only part of a line or letter at one motion.

Q. 35. You speak of a fire-alarm and a burglar-alarm; how were they to give signals; what did the alarm consist of?

Ans. They were an arrangement—the burglar-alarm—attached to the door or place of entrance and communicated to the apartment that the parties wished to get the alarm. The fire-alarm—I can't tell you what

it was like, but it was an arrangement in the room where fire was kept and likewise to alarm or communicate with the sleeping apartment. I understand the alarm to be the tapping of a bell.

Q. 36. You have mentioned clocks among the things he made; tell me something about them.

Ans. The first I recollect was a clock winding with a chain; then there was the—as he termed them—magnetic and the electric clocks.

Q. 37. Give me some description of these magnetic and electric clocks as you first saw them.

Ans. The magnetic clock was an eight cornered clock with a battery attached, as I understand it; the electric clock was quite simple, mechanically arranged, with a long pendulum and some magnetic arrangement —positive and negative poles—producing the motion of the pendulum, and a wire arrangement that ran down into moist—either earth or water, I can't say which.

Q. 38. When you first saw this pendulum clock did it have a finished walnut and glass case around it, or what was its condition in that respect?

Ans. No, sir; it had not; it was just a simple construction.

Q. 39. Did you ever at any time see at his shop a magnetic pendulum clock in a large case of walnut and glass?

Ans. Yes, sir; though I don't know whether it was natural or stained; I should take it for natural.

Q. 40. Did Mr. Drawbaugh ever speak to you about his having a talking-machine, or show you anything which he said was a talking-machine; and if so, when for the first time?

Ans. Yes, sir; in 1878; in or about September.

Q. 41. Did he show you any instruments the first time that he spoke to you about it?

Ans. Yes, sir.

Q. 42. I ask you to look at the instruments now shown you, "F," "B," "C," "C reproduced," "I," "A," "D," "E," "G," "O," "L," "M," "N," "Q," "H," "J," "P," and tell me whether you recognize any of them as being the same or similar to any instrument that you saw on the occasion which you have just testified about?

Ans. Yes, sir; this one (indicating "B"); and I faintly recollect of something like "A" and "F."

Q. 43. Do any of the others bring to your mind anything you saw there?

Ans. No, sir.

Q. 44. Did he give you any explanation of how these instruments were to operate, or how talking was to be carried on with them, and if so, tell me what he said about it?

Ans. Yes, sir; the principle being vibration communicated by a string and probably wire.

Q. 45. Was this, or was it not, the first time you ever heard that Mr Drawbaugh had a speaking telephone?

Ans. Yes, sir.

Q. 46. Had you or had you not seen any of these instruments at his shop before that?

Ans. No, sir.

Q. 47. Do you remember reading in the newspapers concerning the existence of speaking telephones and their introduction into use by the community?

Ans. Either reading or hearing it talked of.

Q. 48. Was this communication that Mr. Drawbaugh made to you, when he showed you these instruments, before you had heard of speaking telephones elsewhere, or after you had heard of them elsewhere?

Ans. After.

Q. 49. I want to know whether you think that Mr. Drawbaugh could have had in his shop speaking telephones, during the time the faucet company was carrying on its operations, and from thence on to the Centennial year, and been in the habit of showing them to people who came there, to the extent of fifty, or perhaps a hundred persons, who came there during that time, and been in the habit of freely communicating knowledge of them to the community during that time without you knowing of it.

[*Objected to by Mr. Hill as calling for mere opinion, leading, and incompetent.*]

Ans. I do not.

Cross examined by Mr. Hill:

Cross-Q. 50. Are you able to swear that, as a matter of fact, Mr. Drawbaugh did not have electric speaking telephones in his shop for at least seven or eight years prior to 1876, and show them to a great many different persons during those seven or eight years?

Ans. I am—that he did not have them.

Cross-Q. 51. Do you swear to that positively?

Ans. I do.

Cross-Q. 52. How many times were you in Mr. Drawbaugh's shop in the year 1876, prior to your buying the ram?

Ans. I cannot say.

Cross-Q. 53. How many times were you in his shop during the year 1875?

Ans. I cannot say.

Cross-Q. 54. How many times were you in his shop during the year 1874?

Ans. I can't say.

Cross-Q. 55. How many times were you in his shop during the year 1873?

Ans. I can't say.

Cross-Q. 56. How many times were you in his shop during the year 1872?

Ans. I can't say.

Cross-Q. 57. How many times were you in his shop during the year 1871?

Cross-Q. 58. Do you remember any particular occasion of being at his shop in 1872?

Ans. I do not.

Cross-Q. 59. Do you remember any particular occasion of being at his shop in 1873?

Ans. No, sir.

Cross-Q. 60. Do you remember any particular occasion of being at his shop in 1874?

Ans. No, sir.

Cross-Q. 61. Do you remember any particular occasion of being at his shop in 1875?

Ans. No, sir.

Cross-Q. 62. Do you remember any particular occasion of being at his shop between the beginning of 1876 and the time when you ordered the ram?

Ans. No, sir.

Cross-Q. 63. I will ask the examiner to read to you the 50th and 51st cross-questions and answers, and after you have heard them read, I ask you whether the answers are correct, or whether you have anything to modify or explain about them; or are you willing that they should stand as your testimony?

Ans. I am, so far as my knowledge goes.

years from 1868 to 1876 and afterwards; I suppose you do not know what those witnesses saw or did not see; do you?

Ans. I don't.

Cross-Q. 80. All that you can testify to, then, is that you did not see the talking-machine there yourself prior to 1878; am I correct?

Ans. I did not see it myself; yes, sir.

Cross-Q. 81. You have testified that Mr. Drawbaugh furnished you a ram about May, 1876; how do you fix that date?

Ans. By a photograph that we had taken of our premises in 1875.

Cross-Q. 82. I don't see how that could help you fix the date—please explain.

Ans. By a water reservoir that we had up near the house after we had the ram in.

Cross-Q. 83. You mean that if the ram had been put in before the photograph had been taken, the photograph would show the reservoir; and that as the photograph does not show the reservoir, therefore the ram was not put in before the photograph was taken; is that your idea?

Ans. Yes, sir.

Cross-Q. 84. How do you know the photograph was taken in 1875?

Ans. From the fact that we had a child that was just of an age—that we had her standing on the porch when the photograph was taken, and we know the age of the child at that time; from that I know it was in 1875.

Cross-Q. 85. What was the age of the child at that time?

Ans. The child was born in 1874, in February.

Cross-Q. 86. Did you have any account with Mr. Drawbaugh showing when the ram was put in or paid for?

Ans. Not that I recollect.

Cross-Q. 87. How was the ram paid for; and when, so far as you recollect?

Ans. I paid him in money, and soon after, if not at the time.

Cross-Q. 88. Did you furnish him any money on the ram account before he put it in?

Ans. I don't recollect.

Cross-Q. 89. What kind of pipe was put in with the ram, and where was it obtained?

Ans. Black iron pipe; Dan furnished part; the balance I bought at Harrisburg.

Cross-Q. 90. From whom did you buy said balance?

Ans. Kelker Brothers.

Cross-Q. 91. Did you ever buy any iron pipe from them at any other time?

Ans. It occurs to me I did.

Cross-Q. 92. Before or after?

Ans. After.

Cross-Q. 93. How much pipe was put in with the ram?

Ans. I should suppose near about two hundred yards.

Cross-Q. 94. How much of that did Mr. Drawbaugh furnish?

Ans. I disremember.

Cross-Q. 95. How long was Mr. Drawbaugh at work putting in that ram?

Ans. I couldn't really say, as we done a good deal of the work in his absence—the laying of the pipe.

Cross-Q. 96. Did you talk over the subject of hydraulic rams with Mr. Drawbaugh considerably about that time?

Ans. I did.

Cross-Q. 97. Did he mention any persons for whom he had put in rams, or who had ordered rams of him prior to that time?

Ans. Yes, sir; prior or about that time.

Cross-Q. 98. Name the persons whom he mentioned in that connection, so far as you recollect their names.

Ans. George Heck, and one on Daniel Eppley's farm, to the best of my recollection.

Cross-Q. 99. How far were Heck's and Epply's places from yours?

Ans. The former about three; the latter all of five miles.

Cross-Q. 100. Did he mention anything about putting a ram in at or near Marysville, on the farm then occupied by George W. Kissinger?

Ans. It occurs to me that he did mention something about it.

Cross-Q. 101. So far as you have any recollection of what he said about it, please state it.

Ans. I don't remember.

Cross-Q. 102. Do you remember whether he mentioned that the farm belonged to a gentleman living down in Delaware, whose name was Thomas Draper?

Ans. I don't.

Cross-Q. 103. When did you first see at Mr. Drawbaugh's shop an electric or magnetic clock having wires running to plates in the ground or water?

Ans. In 1877, or earlier; I am not positive.

Cross-Q. 104. When did you first see an electric or magnetic clock at his shop?

Ans. I couldn't really say.

Cross-Q. 105. Give your best recollection.

Ans. Say 1875; I couldn't approximate hardly.

Cross-Q. 106. Can you swear that you saw one there before your ram was put in?

Ans. I could not.

Cross-Q. 107. At the time Mr. Drawbaugh showed you his talking-machine in 1878, how do you fix the date?

Ans. Being on an occasion of having him down to do some repairs—something about the ram or stop-cocks.

Cross-Q. 108. I don't see that that fixes the date; can't you tell us more definitely than that how you fix it?

Ans. I had been west just previous to that, and they had had him down during my absence.

Cross-Q. 109. When did you go west on that trip?

Ans. In early seeding time, probably the beginning of August.

Cross-Q. 109. How do you know that you went west in 1878, and that it was not in 1877 or 1879?

Ans. Because it had been the year just previous to my making sale in 1879.

Cross Q. 110. How long were you in Mr. Drawbaugh's shop at the time you saw the talking-machine there in 1878?

Ans. Oh! probably an hour.

Cross-Q. 111. What work was going on there at that time?

Ans. I don't recollect.

Cross-Q. 112. Whom did you see there besides Mr. Drawbaugh on that occasion?

Ans. I don't remember of anyone.

Cross-Q. 113. What machines or inventions of his did you see there at that time besides the talking-machine?

Ans. I don't remember of any.

Cross-Q. 114. How happened you to see the talking-machine there then?

Ans. I don't really recollect, but it occurs to me that it was lying there on a work-bench, and he, Mr. Drawbaugh, showed me the machine.

Cross-Q. 115. If you remember what he said about the talking-machine invention at that time, please state all that you remember.

Ans. All that I recollect positively was vibration.

Cross-Q. 116. Did he tell you that it operated by electricity?

Ans. He did not.

Cross-Q. 117. Do you remember seeing any magnets connected with the machines?

Ans. I do not.

Cross-Q. 118. Do you remember seeing any wires wound in a close coil connected with the machine?

Ans. I am not sure about that.

Cross-Q. 119. Had you been in his shop at any time from the third of October, 1876, until you saw the talking-machines in 1878?

Ans. Yes, sir.

Cross-Q. 120. How many times do you think you had been in his shop during that period, from October 3, 1876, until you saw the talking-machines?

Ans. I could not say, though not very frequently.

Cross-Q. 121. Do you think you would have seen and known of talking-machines being there in his shop if they had been there from October 3, 1876, until the time when you saw them?

Ans. I think so, though not positively.

Cross-Q. 122. Two of the complainant's witnesses, Mr. Landis and Mr. Shapley, have testified to seeing the talking-machine there on October 3, 1876; two others, the young Ditlows, have testified in effect to the operation of talking-machines there in the early spring of 1877; another, Mr. Evans, has testified to hearing them talked about in the community in the year 1877, and to hearing various persons then speak of being down there and operating them; another, Mr. Kahney, has testified to seeing them there in the latter part of 1877, or early part of 1878; and several others have testified to seeing them there between that time and the time you fix as the time when you saw them. Assuming this testimony, which the complainants have put in, to be true, it would follow that the talking-machines were actually there nearly two years without your having any knowledge or recollection of the fact; would it not?

Ans. I don't know anything about the parties or circumstances, and shouldn't feel like disputing with any of them on that.

Cross-Q. 123. How did your ram work—pretty well?

Ans. Reasonably so.

Cross-Q. 124. Did it ever get frozen up or injured by the frost?

Ans. No, sir.

Cross-Q. 125. You have referred, in answer 32, to seeing a number of machines at Mr. Drawbaugh's shop, to wit: among others, the nail-machine, the gas-governor, the tram, the fire-alarm, the burglar-alarm, the barometer, and the printing telegraph; when did you first see those machines at his shop?

Ans. I seen some of them while the company was yet in operation; I couldn't make any definite statement.

Cross-Q. 126. Please state which of them you saw while the company was in operation, and not later than 1871.

Ans. It occurs to me that I saw the nail-machine there prior to 1871; then the clocks as heretofore stated, and the balance I couldn't place as to time.

Cross-Q. 127. You couldn't swear that you saw the gas-governor, the tram, the fire-alarm, burglar-alarm, the barometer, or the printing telegraph while your old company was in operation, could you?

Ans. I feel positive that the majority of them were there at that time; if not, soon following.

Cross-Q. 128. Was there any talk about your company manufacturing any of them?

Ans. Yes, sir.

Cross-Q. 129. Which ones?

Ans. It occurs to me, the mill-tram, nail-machine, and gas-governor, though I am not positive on that.

Cross-Q. 130. Did your company ever manufacture any of those machines or instruments?

Ans. Probably the mill-tram, though very limited.

Cross-Q. 131. At how early a date did you first see the printing telegraph there at his shop?

Ans. As it occurs to me, 1876.

Cross-Q. 132. At the time when you got the ram?

Ans. I am not sure as to that.

Cross-Q. 133. When did you first see the fire-alarm and burglar-alarm there?

Ans. In or about that time, but I am not really positive.

Examination taken, reduced to writing, and by the witness affirmed and subscribed to before me, this 8th day of January, 1883.

FRED. M. OTT,
Examiner.

J. F. HURSH.

Adjourned until Wednesday, January 10, 1883, at ten, A. M.

JANUARY 10, 1883, 10, A. M.

Examination postponed until January 11, 1883, 11, A. M.

JANUARY 11, 1883, 11, A. M.

Examination resumed, pursuant to adjournment.

Present, Mr. Storrow for complainants and Mr. Hill for respondents.

CHARLES ANDREW LANDIS, *being produced, affirmed, and examined, saith:*

Examined by Mr. Storrow:

My age is twenty-four. Residence, Middletown, Dauphin county, Pennsylvania. Occupation, jeweler.

Q. 1. Are you a brother of Mr. I. D. Landis, of Coatesville, Pennsylvania, who has already testified in this case?

Ans. I am.

Q. 2. Did you ever live with Mr. R. E. Shapley at Mechanicsburg; and if so, from what time to what time?

Ans. I did. From Thanksgiving day, 1876, to about the same time 1878.

Q. 3. What did you live there for? What were you occupations?

Ans. I was there for the purpose of acquainting myself more thoroughly with my trade. I was a watchmaker and jeweler.

Q. 4. Do you know Mr. Daniel Drawbaugh of Eberly's Mills, and did you ever go to his shop at Eberly's Mills while you lived with Mr. Shapley?

Ans. I know Mr. Daniel Drawbaugh and have been at his shop during the time I worked at Mr. Shapley's.

Q. 5. If you have any memorandum which enables you to fix the

date of any of your visits to Mr. Drawbaugh's shop, please produce it and state the date and how you fix it.

Ans. By an old account-book between Mr. Shapley and myself, I find I visited Mr. Drawbaugh's shop between March 31st and April 13th, 1877, and once between October 25th and November 13th, 1877. The book is a pocket memorandum-book, containing entries of sundry expenses and cash, beginning in December, 1876, when I first went to Mr. Shapley's. There is an entry in it as follows: "Milltown, 50 cents." It is not dated, but the last date before it is "March 31st," and the next date after it is "April 13th." That was in 1877, as the other items of the account-book show. Further on, in the same book, is an entry, "Milltown, 50 cents." It is immediately under an entry dated "October 25th," and is immediately followed by an entry dated "November 13th." The year was 1877.

Q. 6. Did you make any other visit at any other time to Mr. Drawbaugh's shop; and, if so, can you fix the date of that?

Ans. I made one other visit, but cannot fix the date.

Q. 7. Did you at any time at Mr. Drawbaugh's shop see any instrument which he referred to as a talking-machine, or a machine for conveying sounds by electricity; and, if so, at which visit was it?

Ans. I did at my first visit, which was between March 31st and April 13th, 1877.

Q. 8. Before you made that visit, had you heard from any one that Mr. Drawbaugh was engaged on such a machine, or had your attention been called to the fact by any one; if so, by whom?

Ans. Mr. Shapley called my attention to the fact of Dan's having a talking-machine, and said I should see it when I went there.

Q. 9. Will you look at the tray of instruments now shown you—exhibits in this case—and tell me whether you see any instrument among them which resembles the instrument which you saw at Mr. Drawbaugh's shop, on your first visit there, about the first of April, 1877?

Ans. I saw this instrument, ("B,") or one similar to it, at least, with the exception of the electro-magnets; this ("F") I saw, or something similar to it, without the top; they were both lined with plaster of paris inside; I recognize nothing else.

Q. 10. Please describe a little more particularly the tin can instrument, like "B," which you saw there, and state what explanation he gave you

of the construction of the parts of which it was composed, and of the way in which it operated.

Ans. I think it was perfectly similar as this "B," with the exception of the lining and the magnets; at the time I seen it, the membrane covering the opening of the can had been eaten away by mice, he said; the string outside and the remains of the membrane were as now. He said the manner in which it operated was as follows: The membrane had fastened to it a piece of metal; this strip, which is fastened to the bottom board at the end of the can—he said it should be platina—it extended upward, the end being directly in front of the metallic piece on the membrane; and by the action of the waves of sound, caused by the voice on the membrane, the piece of metal and the platina point would come in contact, thereby making and breaking the circuit, which making and breaking would be repeated at the other end of the line. The other instrument he did not explain.

Q. 11. Of what material is the strip to which you have referred and how is it lettered in the drawing of instrument "B," which the respondents have put in evidence?

Ans. It is lettered H. This strip is of tin—the one here on the instrument. I couldn't say positively as to the one I saw.

Q. 12. On the occasion of this visit what led to your seeing the instrument you have testified about? Did you ask for it first or did he offer to show it to you first?

Ans. I asked to see it and he showed it to me.

Q. 13. What part of his shop was it in when you saw it?

Ans. On entering from the outside stairway it was in the small room to the left on the third floor.

Q. 14. How was that story partitioned off?

Ans. One large room and two small ones, the entrance being between the two small rooms.

Q. 15. Do you remember seeing at any subsequent visit any talking-machine, or anything which you understood to be one?

Ans. I do not remember of seeing it.

Q. 16. On the occasion of this visit when you saw the tin can instrument which you have described, did Mr. Drawbaugh say anything to you about any results he had obtained, and did he tell you why he put the plaster of paris inside?

Ans. He said he had had the instrument to speak, but that in words of more than one syllable it would continue to repeat the first syllable,

and that he had used the plaster-of-paris lining to destroy that defect, but it did not prove satisfactory.

Q. 17. Did you ever see a galvanometer in his shop?

Ans. I did.

Q. 18. Do you remember any particular use he made of it, or experiment he made with it, in your presence, or with your assistance at any time? If so, state it.

Ans. He showed the electricity in water by placing two small metal plates, with wire attached, into a saucer of water; and also showed the electricity in the human body by holding the metal plates between the thumb and finger, one in each hand, and requesting me to do the same.

Q 19. What use did he make of the galvanometer in that experiment?

Ans. By the turning of the needle he showed the amount of electricity developed.

Q. 20. Did you ever see anything of a magnetic or electric clock of Mr. Drawbaugh's, at Mr. Shapley's store?

Ans. I did.

Q. 21. Do you know whether Mr. Shapley made one substantially like it?

Ans. He made one to run by the same power as Mr. Drawbaugh's, and nearly like his.

Q. 22. Do you remember whether there was any difference in the wheel-works of the two; and if so, what was it?

Ans. In Mr. Drawbaugh's clock the second-hand ran backward, or in an opposite direction to the other hands; but in Mr. Shapley's clock, by the use of an intermediate wheel, the second-hand was made to run forward, or in the same direction as the other hands.

Q. 23. Did you do any work on this electric clock that Mr. Shapley built; if so, what did you do?

Ans. I did; I helped to fill in, shape and polish bridges, wheels, &c.

Q. 24. Did you cut any of the gears for it?

Ans. I did not.

Recess for lunch until 2.30.

JANUARY 11, 1883, 2.30, P. M.

Examination resumed, pursuant to adjournment.

Present, Mr. Storrow for complainants and Mr. Hill and Mr. Jacobs for respondents.

Examination of Charles Andrew Landis, by Mr. Storrow, continued:

Q. 25. Where was the large gear for Mr. Shapley's clock cut, and who cut it?

Ans. It was cut at Mr. Drawbaugh's shop, and to the best of my knowledge it was cut entirely by Mr. Drawbaugh.

Cross-examined by Mr. Hill:

Cross-Q. 26. How do you fix the date of your going to work for Mr. Shapley, and of your ceasing to work for him?

Ans. I remember distinctly being out with my friends on Thanksgiving day, and of parting with them in the evening at the train, to go down to Mechanicsburg. My records show that I commenced business at Greencastle, December 2 or 3, 1878, and before going there, after quitting Mr. Shapley's, I had a vacation of a week or possibly two weeks—I think it was two weeks—before I went to Greencastle. I spent my vacation at Shippensburg.

Cross Q. 27. Where were you living up to the time when you went to work for Mr. Shapley?

Ans. I was born in Shippensburg and lived there continuously up to some time in 1876, when I went to Coatesville and stayed probably two or three months with my brother, I. D. Landis, still claiming Shippensburg as my home.

Cross-Q. 28. How long did you live at Greencastle, and how long have you lived at Middletown?

Ans. At Greencastle about a year and eleven months. At Middletown about two years and two months.

Cross-Q. 29. With whom, on the part of the complainants, have you conversed about your testimony in this case?

Ans. With Mr. Storrow and Mr. Smith.

Cross-Q. 30. Is that all?

Ans. Yes, sir.

Cross-Q. 31. Did you ever have a talk with Mr. John C. Comfort about it?

Ans. No, sir; I don't know the gentleman.

Cross-Q. 32. How many times have you conversed with Mr. Storrow and Mr. Smith about your evidence, and when first?

Ans. I conversed with Mr. Storrow first, about a month ago; with Mr. Smith yesterday, and with Mr. Storrow again to-day.

Cross-Q. 33. Did they show you any telephones?

Ans. Yes, sir.

Cross-Q. 34. Where and when first?

Ans. In my store in Middletown at the time of the first interview with Mr. Storrow and last evening by Mr. Smith.

Cross-Q. 35. How many machines did Mr. Storrow show you at Middletown?

Ans. I cannot say positively, probably three or four.

Cross-Q. 36. Did he show you a tin-box machine and a tumbler-machine?

Ans. He did.

Cross-Q. 37. Did you tell him all you have told us on the witness stand?

Ans. I suppose I did.

Cross-Q. 38. Did you tell him anything you have not told us? If so, what was it?

Ans. I don't know of anything that I told him that I have not told here.

Cross-Q. 39. If I understand you correctly, you did not see any talking-machines at Mr. Drawbaugh's shop, except at your first visit there; am I right?

Ans. You are.

Cross-Q. 40. How many talking-machines did you see there?

Ans. I saw no talking-machines, but the tin box "B," and the glass tumbler "F," without a top.

Cross-Q. 41. When you asked Mr. Drawbaugh to show you his machines, where did he obtain the two instruments that he showed you?

Ans. I went with him from the small room to the right to the small room to the left, where he had them.

Cross-Q. 42. Where were they in the small room at the left when you went in there with him?

Ans. On the work-bench, directly in front of the entrance door.

Cross-Q. 43. Did you look around to see whether there were any other talking-machines there, or did you confine your attention to those machines that he showed you?

Ans. I did not look for any others particularly, and only examined those he showed me.

Cross-Q. 44. Please look at these instruments "A," "D," "E," "C," "C reproduced," and "H," and state whether you saw any of them there at his shop at any time, or anything resembling them.

Ans. I did not see any of these, nor anything resembling them.

Cross-Q. 45. What did Mr. Drawbaugh say at that time about the tumbler instrument?

Ans. I don't know of his saying anything about it, only that it was in some way connected with the speaking-machine.

Cross-Q. 46. Did he tell you that these two machines, which he had shown you, were among the earliest that he had made?

Ans. He did not; but spoke of them as though it was entirely new.

Cross-Q. 47. How new?

Ans. No time was specified.

Cross-Q. 48. Did he tell you that either of them ever had an electro-magnet?

Ans. I don't think he did.

Cross-Q. 49. Am I to understand you that the machine "B" had no electro-magnet on it, as you recollect it?

Ans. As I recollect it, it had none.

Cross-Q. 50. Do you swear positively that it had none, or only that to the best of your recollection you can remember none?

Ans. I have not the slightest recollection of any electro-magnet being there.

Cross-Q. 51. What did he tell you that that machine "B" was to be used for?

Ans. I understood it to be used for speaking into.

Cross-Q. 52. Did he describe to you the machine that was to be used for listening at?

Ans. He did not; but from his conversation I inferred, or rather concluded, that the tumbler was to perform that part; I don't know by what means.

Cross-Q. 53. Did you look into the tumbler, to see what was in it?

Ans. I only know it was lined with plaster of paris.

Cross-Q. 54. I asked you if you looked into it.

Ans. I think I did.

Cross-Q. 55. Did you see anything in it except the plaster of paris?

Ans. Nothing.

Cross-Q. 56. Did he show you the top piece, that was designed to go on to the tumbler that he used with it?

Ans. He did not show me anything to be used on or in the tumbler.

Cross-Q. 57. Did the tumbler have a bottom, or had the bottom been broken off?

Ans. It had been broken off.

Cross-Q. 58. In the tin-can instrument, was the can painted green, like this one here?

Ans. I think it was.

Cross-Q. 59. Did he tell you about having made any changes in the tin-can instrument, or did you understand it to be the same as it always had been since it was first made?

Ans. I understood no change, except the plaster-of-paris lining.

Cross-Q. 60. I understand you that he didn't describe to you the machine that was to be used for listening at; am I right?

Ans. You are.

Cross-Q. 61. Did he tell you anything about the substance or substances that he had had across the end of the tin can, next to where the string is?

Ans. He did.

Cross-Q. 62. What did he tell you about it?

Ans. He said he had had a piece of membrane—bladder—stretched over the opening of the can, and that the mice had eaten it away.

Cross-Q. 63. Did he tell you how the changes in the weather affected that membrane by making it shrink or swell?

Ans. He did not.

Cross-Q. 64. Did he describe to you the piece of metal that was attached to the membrane?

Ans. He said there had beeen a small piece of metal fastened to the center of the membrane.

Cross-Q. 65. Did he tell you what kind of metal it was?

Ans. I do not remember.

Cross-Q. 66. Referring to the strip which you have identified with the strip H of the drawing; what kind of metal was that strip as you saw it on the instrument?

Ans. My recollections are that it was a white looking metal—probably tin.

Cross-Q. 67. Do you remember how it was fastened to the baseboard?

Ans. By a screw, I think, as I know it was moveable.

Cross-Q. 68. Was there any hole in it, except the screw-hole for the screw that fastened it to the base-board?

Ans. I do not remember.

Cross-Q. 69. You have no more recollection of any hole in it, except the screw-hole, than you have of an electro-magnet on the machine; have you?

Ans. I did not see any electro-magnet connected with it, and there might have been a hole in the strip.

Cross-Q. 70. Was there any other strip, except that one which you have mentioned?

Ans. What kind of a strip do you mean?

Cross-Q. 71. A metal strip.

Ans. Nothing, except it be something of this kind—(indicating the strap of tin that secures the tin can of "B" to the board)—something of this kind to hold the can down.

Cross-Q. 72. Then the strip of white metal or tin which you saw was not connected to anything but the base-board; was it?

Ans. When I saw it, it was not.

Cross-Q. 73. As you saw the machine, was there any wire about the machine?

Ans. I don't remember of any wire being about it?

Cross-Q. 74. All that you remember, then, was a base-board; a tin can strapped on it; and a little strip of white metal or tin fastened to the base-board with a screw, near the open end of the can; am I right?

Ans. There were two open ends to the can when I saw it.

Cross-Q. 75. That doesn't change my question any; and you will please answer my question.

Ans. You are right with the addition of the fringes of the membrane fastened on with a string.

Cross-Q. 76. Referring to the strip of white metal, or tin, as you remember it, how does it compare with the strip of tin on the machine "B"?

Ans. As I remember it, they are similar.

Cross-Q. 77. Then if this electro-magnet and its supporting block on the instrument "B" should be temporarily removed for any purpose, the remaining parts would correspond to your remembrance of the ma-

chine as you saw it, with the exception that the box was lined with plaster of paris. Am I correct?

Ans. You are.

Cross-Q. 78. If I understand you correctly, Mr. Drawbaugh stated to you his opinion that the plaster-of-paris lining didn't make much difference in the working of the instrument. Am I right?

Ans. He said it did not stop the repeating.

Cross-Q. 79. How did he explain the repeating. Did he say it was caused by the vibration of the walls of the tin box?

Ans. I think he did not understand the cause.

Cross-Q. 80. If I understand you, you got the idea that if a word of more than one syllable was spoken into this machine, the person listening at the receiving instrument at the other end of the circuit or line would hear the first syllable repeated several times; am I correct?

Ans. You are.

Cross-Q. 81. So that, for example, if the word "Harrisburg" were spoken into the transmitting instrument, the listener at the other end of the line would hear the syllable, "Har–har–har–har," several times repeated; is that correct?

Ans. That is the way he told me, using as an illustration, "Philadelphia."

Cross-Q. 82. Taking that word as an illustration, you understood that the listener at the receiving instrument would hear the syllable, "Phil–phil–phil–phil," several times repeated; am I right?

Ans. Yes, sir; the syllable "Phil" would be several times repeated.

Cross-Q. 83. Did you understand that the remaining syllables of the word would not be heard at the receiving end of the line, but only the first syllable so repeated?

Ans. The first syllable being repeated would confuse the others, so that you would not be able to make out the other syllables.

Cross-Q. 84. And the result would be that the listener, at the receiving instrument at the other end of the line, only hearing the first syllable repeated, and not being able to make out any other syllable, would lose all of the word except the first syllable, would he?

Ans. I should think that would be the result; that is what I understood at the time.

Cross-Q. 85. But you understood that the ear of the listener would catch the confused undertone of the other syllables; did you?

Ans. I did.

Cross-Q. 86. And in order to remedy this singular phenomenon, Mr. Drawbaugh had lined the tin box with plaster of paris, so that it should not transmit the word in that remarkable way; was that your understanding?

Ans. Yes, sir.

Cross-Q. 87. What was your age at the time of that visit?

Ans. About eighteen.

Cross-Q. 88. Were you just commencing to learn your trade?

Ans. No, sir; I had worked at it about three years, with my father and brother, in Shippensburg.

Cross-Q. 89. Had you ever worked at anything involving the application of electricity prior to that visit to Mr. Drawbaugh's shop?

Ans. No, sir; unless it was on the clock Mr. Shapley was building.

Cross-Q. 90. And your work on that, in polishing up wheels, etc., hadn't much to do with the application of electricity; had it?

Ans. No, sir.

Cross-Q. 91. Now, Mr. Drawbaugh himself and all the other witnesses who have testified on the subject, so far as they have testified at all, have testified that this instrument "B" was itself a receiving instrument and not a transmitter, and both Mr. Shapley and your brother have testified within a few weeks past that when they saw this machine on the 3d day of October, preceding your visit to Drawbaugh's shop, it had the electro-magnet on it. In view of these facts, I wish you to reflect carefully and state whether you have any recollection of Mr. Drawbaugh's describing this instrument to you as a receiving instrument and not a transmitter?

Ans. I have no recollection of that kind.

Cross-Q. 92. And all the witnesses who have testified on the subject of the use of the tumbler-instrument "F," have concurred in testifying that that last-named instrument was a transmitter; have you any recollection of Mr. Drawbaugh's so stating to you at the time of your visit?

Ans. I have not.

Cross-Q. 93. In view of the positive testimony of Mr. Shapley and Mr. I. D. Landis, as well as all the other witnesses who have testified on the subject that the machine "B" had the electro magnet, I wish to ask you again a question which you did not answer very clearly or responsively when I asked it before, and it is this: Do you swear positively that the electro-magnet was not on the machine when you saw it, or only that you have no recollection of seeing the electro-magnet?

Ans. I have no recollection of seeing the electro-magnet, and could swear to the best of my knowledge that it was not there.

Cross-Q. 94. And that is as positive as you would be willing to make the statement; is it?

Ans. Yes, sir.

Cross-Q. 95. Did Mr. Drawbaugh tell you anything else about his talking-machine invention which you have not testified to; if so, what was it?

Ans. He said it would be a good thing if it was completed.

Cross-Q. 96. Can you give his words?

Ans. I cannot.

Cross-Q. 97. Can you give his words for any statement that he made during the interview?

Ans. I cannot with any degree of certainty or correctness.

Cross-Q. 98. As you cannot give his exact words, I suppose you can only testify to your understanding of what he said, so far as you remember what your understanding then was. Am I correct?

Ans. I may give the substance of the conversation and yet not be able to give the exact words.

Cross-Q. 99. The giving of the substance is simply the giving of your understanding of it at the time, is it not?

Ans. I suppose it is.

Cross-Q. 100. And if you misunderstood his statements or explanations, then your testimony to that extent would be erroneous; would it not?

Ans. I suppose it would.

Cross-Q. 101. And if you misrecollected it, or failed to recollect it fully, then your testimony to that extent would be erroneous, would it not?

Ans. If I did not recollect it, I could not give any testimony.

Cross-Q. 102. And if you only partially recollected it, your testimony to that extent would be unreliable; would it not?

Ans. I think the part that I remembered would be reliable enough, and the part I did not remember I could not testify to.

Cross-Q. 103. But if you remembered one part, and did not remember another part, how do you know that the part which you have forgotten did not essentially modify the part that you do remember?

Ans. I think if I remember any part distinctly, it it not possible for it to become confused with anything else.

Cross-Q. 104. What thing that you have testified to concerning your visit to Drawbaugh's shop do you remember most distinctly?

Ans. I can hardly say. Everything connected with the shop is very vivid to my mind, except a few things, such as I have been doubtful of in my testimony.

Cross-Q. 105. Are you in any way doubtful about the instrument "B" being described to you as a transmitter?

Ans. I am not.

Cross-Q. 106. Are you as sure of that as you are of anything else that you have testified to in the case?

Ans. I am.

Cross-Q. 107. Is there anything else connected with that visit that you are surer of than you are of that?

Ans. How many degrees of certainty are there?

Cross-Q. 108. I want to know how many there are in your mind, and I repeat the question.

Ans. I am sure of the instrument "B" having been said to be a transmitter, and I am as sure of that as anything else during the visit.

Cross-Q. 109. You have testified that Mr. Drawbaugh told you that when a long word was spoken into the instrument "B," the listener at the receiving end of the line would hear the first syllable repeated several times, but would not be able to make out the rest of the word; have you testified to anything else that took place during your visit that you are surer of than you are of that statement having been made to you by Mr. Drawbaugh?

Ans. No, sir.

Cross-Q. 110. You have testified that some of the gearing of Mr. Shapley's clock was made at Mr. Drawbaugh's shop; did you see it made there?

Ans. I saw him commence to cut the wheel which I took down.

Cross-Q. 111. Was it the object of your visit to carry the wheel?

Ans. As far as Mr. Shapley was concerned it was; as far as I was concerned, it was a desire to go there.

Cross-Q. 112. Where was Mr. Drawbaugh living at that time?

Ans. I don't know; either in Mechanicsburg or Milltown, but I don't know which.

Redirect by Mr. Storrow:

Q. Q. 113. Was Mr. Shapley at one time a telegraph operator, or manager of a telegraph office?

Ans. He was.

Q. Q. 114. When and where?

Ans. In his store, in Neiswanger's building, in Mechanicsburg, but I cannot state the time.

Q. Q. 115. Do you remember what company?

Ans. The Atlantic and Pacific Telegraph Company.

Q. Q. 116. Were you ever in his store while he had the telegraph office there?

Ans. I was there once; probably twice.

Q. Q. 117. Did you ever anywhere learn telegraphing, or practice at it any?

Ans. During my visits there I learned the alphabet, and could read the paper coming from the register, and could possibly write some with the key.

Q. Q. 118. That company had given up its office in Mechanicsburg some time before you went to live with Mr. Shapley, in the fall of 1876; had it not?

Ans. It had.

Q. Q. 119. On the instrument "B," now before you, the tin strip, marked H in the drawing, has, at the end of it on the board, and furthest from the diaphragm, a small round hole in addition to the slot that the screw passes through; has it not?

Ans. It has.

Q. Q. 120. And that is indicated by a little dot or mark on the drawing; is it not?

Ans. Yes, sir.

Q. Q. 121. You produced this morning a memorandum-book containing a cash account between you and Mr. Shapley. Will you show the examiner the first item in that account?

Ans. It is headed "R. E. S. in account with C. A. L." The first item is "December—bill for Hurst, $20." The next entry is January. The next March; and so on down to June. The year is not given on that page, but the next page is headed "June, 1877, amount brought over."

Re-cross by Mr. Hill:

Re-cross Q. 122. Did you tell Mr. Drawbaugh anything about your telegraphic acquirements and experience?

Ans. The only thing I remember of is telling him that I liked the study of electricity, having studied it theoretically at school.

Examination taken, reduced to writing, and by the witness affirmed and subscribed to before me this 11th day of January, 1883.

FRED. M. OTT,
Examiner.

C. A. LANDIS.

Adjourned until January 12, 1883, at 10, A. M.

JANUARY 12, 1883.

Examination resumed, pursuant to adjournment at twelve o'clock, M. Present, Mr. Storrow for complainants and Mr. Hill for respondents.

THOMAS M. JONES, *being produced, sworn, and examined, saith:*

Examined by Mr. Storrow:

My age is thirty-two; residence, Harrisburg, Pennsylvania; occupation, reporter and newspaper correspondent.

Q. 1. How long have you followed that occupation in Harrisburg?

Ans. About seven years.

Q. 2. I call your attention to an article entitled "Drawbaugh's Genius" in the *Philadelphia Press* of Wednesday, January 18, 1882, and to another copy of the same article, entitled "The First Telephone" in the *Daily Telegraph* of Harrisburg of Monday Evening, January 16, 1882; did you write this article and furnish it to these two papers for publication?

[*Objected to by Mr. Hill, as immaterial and irrelevant.*]

Ans. I did.

Q. 3. From whom did you obtain the information contained in this article?

[*Same objection.*]

Ans. I got it from Mr. M. W. Jacobs of Harrisburg, an attorney.

Q. 4. Whereabouts were you and he when he gave you this information?

[*Same objection.*]

Ans. I went to his office to see him.

Q. 5. How long were you at his office on this occasion?

Ans. About an hour and a half, as near as I can recollect.

Q. 6. Did you inform him and did he understand that the information you obtained from him would be published in the form of a newspaper article?

[*Same objection.*]

Ans. I have reason to believe that he did so understand from the fact that when I took the notes for the article in his presence, he several times suggested corrections.

Q. 7. Had you known Mr. Jacobs long before this?

[*Same objection.*]

Ans. Yes, I have known Mr. Jacobs for some time; I cannot say how long—four years at least.

Q. 8. Was it in the day time or the evening that you obtained this information from him at his office?

[*Same objection.*]

Ans. In the evening.

Q. 9. After the article was written and before it was published did you tell him that you had sent it to the papers for publication?

[*Same objection.*]

Ans. I told him it was my intention to publish it in the Philadelphia and Harrisburg papers.

Q. 10. Had Mr. Jacobs at any time before this interview, told you that he would furnish you information for a newspaper article?

[*Same objection.*]

Ans. I think it was the summer of 1881—I am sure it was—somewhere about the beginning of the summer, that I asked Mr. Jacobs for a few points for a telephone article. He set Sunday afternoon next following as the time; that engagement I did not keep. At another meeting he set the next Sunday, which engagement he failed to keep. At different times during that summer we made engagements, but none of them were kept. Subsequently, in the latter part of 1881 or beginning of 1882, I dropped into Mr. Jacobs' office one evening, but whether I made an engagement or not for that occasion, I can't say positively; I am under the impression that I did. It was at this meeting that I secured the information, given me very readily by Mr. Jacobs, upon which the articles in the *Press* and *Telegraph* are based.

(*Mr. Storrow puts in evidence the Harrisburg Daily Telegraph of January 16, 1882, and Philadelphia Press of January 18, 1882.*)

Q. 11. Did you send the article in manuscript to those two papers, or did one of them copy it from the other?

[*Same objection.*]

Ans. I sent manuscript articles to each paper.

[*Mr. Hill, who is the only one of respondents' counsel present, objects to the entire deposition as having nothing in the world to do with the case, and as being simply a waste of time and expense, and a useless cumbering of the record, and he asks time to send for Mr. Jacobs, who is in the city, in order that he may cross-examine if he thinks proper to do so.*]

Recess for lunch, until 2.30, P. M.

JANUARY 12, 1883, 2.30, P. M.

Examination resumed, pursuant to adjournment.

Present, Mr. Storrow for complainants, and Mr. Hill and Mr. Jacobs for respondents.

Cross-examination waived by Mr. Jacobs.

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me, this 12th day of January, 1883.

FRED. M. OTT, *Examiner.*

THOS. M. JONES.

[*Mr. Jacobs states that he did give the information upon which the newspaper articles referred to in Mr. Jones' deposition are based, substantially as that witness has testified, but that he did not give that information until after he had read in the New York Evening Post the report of an interview of a reporter of that paper with Mr. Dickerson, one of the counsel for complainants, in this case, in which published report the facts of this case were grossly misstated.*

Complainants' counsel puts in evidence an article entitled, "The Telephone Suit" from the New York Evening Post of December 9, 1881, purporting to contain the report of an interview with Mr. Dickerson and with Mr. Park Benjamin, a representative of the defendants; also an article entitled The Telephone Suit, from the New York Evening Post of December 16, 1881, containing an article purporting to be signed by Mr. Park Benjamin; also the following articles from the Harrisburg Daily Indepen-

dent: An article from Independent of June 9, 1881, entitled, "The Telephone. Daniel Drawbaugh: The Original Inventor."

An article from the same paper of June 27, 1881, entitled "The Telephone Case."

An article from the same paper of June 30, 1881, entitled "More Evidence."

An article from the same paper of July 28, 1881, entitled "The Telephone Case. Experts to be examined next."

And an article from the same paper of December 29, 1881, entitled "Telephone Troubles."

Complainants' counsel requests the examiner to note that in each of the said numbers of the Harrisburg Independent, the largest advertisement is that of the "99 cent" store of Mr. E. W. Chellis.

Respondents' counsel states that the respondents' testimony was printed at the office of the Harrisburg Independent; that said articles in that paper were prepared and published by the managers of that journal without any authority from or knowledge by respondents or their counsel; and respondents' counsel objects to the examiner's certifying to the size of Mr. Chellis' advertisement in said journal, on the ground that it exceeds his jurisdiction.

Complainants' counsel puts in evidence the whole of each of said papers, to be filed as exhibits in this case.

Respondents' counsel thinks the evidence still incomplete unless the "99 cent" store be also put in evidence.

JOHN W. ANDERSON, *being produced, sworn, and examined, saith:*

Examined by M. Storrow:

My age is thirty nine; residence, Lancaster, Pennsylvania; occupation, manufacturer of carriage-seat iron and carriage hardware, at the present time.

Q. 1. Do you know Mr. Theophilus Weaver of Harrisburg?

Ans. Yes, sir.

Q. 2. Has he ever taken out any patents for you, or in which you have become interested, and has he been employed by you for that purpose?

Ans. Yes, sir.

Q. 3. Please give me a list of such patents.

Ans. 193, 263, C. K. Mellinger, July 17, 1877, bow-irons for carriage-poles; application June 14, 1876.

199, 679, John W. Anderson, January 29, 1878, clip-irons for carriage-poles.

207, 539, C. K. Mellinger, August 27, 1878, jump-seat for carriages.

247, 871, John W. Anderson, October 14, 1881, jump-seat for carriages.

248, 005, John W. Anderson, October 11, 1881, jump-seat for carriages.

248, 818, Theophilus Weaver, October 25, 1881, jump-seat for carriages.

248, 978, John W. Anderson, November 1, 1881, fan-blower.

249, 139, J. W. Anderson and A. B. Groff, November 1, 1881, slicing-machine.

252, 595, John W. Anderson, January 24, 1882, slicing-machine.

252, 831, John W. Anderson, January 24, 1881, device for converting motion.

Re-issue 10,195, Theophilus Weaver, September 12, 1882, jump-seat for carriages, being re-issue of 248,818, Canada patent on same invention.

Q. 4. Is he now employed for you or about to be employed by you in the taking out of any other patents?

Ans. Yes, sir; I wrote to him last week about taking out a patent in Canada for the slicing-machine.

Q. 5. Did you or your company buy of him his jump-seat patent 248,818?

Ans. Yes, sir.

Q. 6. Mr. Theophilus Weaver has been examined as a witness for complainants in this case, and on page 495, complainants' printed record, in his 665th question and answer, has testified as follows with reference to said jump-seat patent:

"*Q. Q.* 665. What did you obtain for that patent, and how came you "to make the invention which it embraced?

"*Ans.* After I had taken out Anderson's last patent on carriage seats, "I told them I knew I had taken out more patents on carriage seats than "any other attorney or set of attorneys in the United States, and that I "believed I could still make an improvement that was distinct from all "the patents I had ever taken out on that subject. "Well," said he, "if "you can do that we would like to have the first chance to buy it." He "asked me to make a model and send it to them; I did so, and he came "up and we entered into an agreement. The company paid for patenting it, and I never put a dollar into it. They were first to run it on "royalty, but they finally preferred to pay for it cash, allowing me about "three hundred dollars for the entire interest. I have since made it "over to them for Canada also, mainly out of good will, receiving only "ten dollars for Canada."

Is that a substantially correct account of the transaction?

Ans. Yes, sir; it is.

Q. 7. Have you manufactured jump-seat irons under that patent of Mr. Weaver's?

Ans. Yes, sir; and continue to do so.

Q. 8. Have you given any name to those jump-seat irons and made any advertising circular of them; if so, will you state what it is and produce the circular?

Ans. The name is "Defiance;" this is the circular of which we have printed about five thousand for the use of ourselves and customers.

Q. 9. Please to read the heading of that circular as part of your answer.

Ans. "Descriptive Circular of the new Defiance Jump-seat Irons, patented October 25, 1881, re-issued September 12, 1882."

(*Mr. Storrow puts the whole circular in evidence as "Exhibit Anderson Circular."*)

Q. 10. Are you well satisfied with the bargain you made with Mr. Weaver for that patent, and do you think it worth to you all that it cost you?

Ans. Yes, sir; we wouldn't take three times what we paid for it.

Q. 11. In that transaction did Mr. Weaver make any attempt to take advantage of you, or to steal the invention from you, or to exact from you any price that you thought unreasonable?

Ans. No, sir.

Q. 12. You seem to have had somewhat extensive dealings with Mr. Weaver and still continue to employ him; in your dealings with him, have you found anything in his conduct or character which you thought unfair or improper?

Ans. No, sir; never.

(*Respondents' counsel decline to cross examine and object to the deposition of this witness as not rebutting and incompetent.*)

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me this 12th day of January, 1883.

FRED. M. OTT,
Examiner.

JOHN W. ANDERSON.

Adjourned until January 31, 1883, at ten o'clock, A. M., at the same place.

PHILADELPHIA, *February* 5th, 1883.

Examination resumed by consent of counsel.

Present, Mr. Smith and Mr. Storrow for complainants, and Mr. Hill for respondents.

GEORGE W. HEIGES, *being produced, sworn, and examined, saith:*

Examined by Mr. Storrow:

My age is forty years; residence, York, Penna.; occupation, attorney-at-law.

Q. 1. Do you know Daniel Drawbaugh, of Eberly's Mills?

Ans. Yes, sir.

Q. 2. About when did you first make his acquaintance, where were you living, and what was your occupation at the time?

Ans. In the winter of 1859 and 1860; I was living temporarily in Shiremanstown, Cumberland county, Penna., and was engaged in teaching a school known as the "Frogtown" school, about a mile south-east of Shiremanstown. The next winter I taught at the Gorgas school. I boarded during the winter of 1860 and 1861 with William R. Gorgas, who lived near the school-house, which was also spoken of as the Cedar Run school-house.

Q. 3. Did you use to meet Mr. Drawbaugh during those winters, and what kinds of subjects were you and he in the habit of talking of besides the ordinary social conversation?

Ans. I met him frequently at spelling schools, singing schools, and in debating society, in the evenings, held at Cedar Run school-house; and we frequently talked about what are known as scientific subjects, under the head of philosophy and chemistry—more particularly upon the principles of natural philosophy, Mr. Drawbaugh doing the talking principally.

Q. 4. The shop which Mr. Drawbaugh has occupied at Eberly's Mills for a dozen years past, is a building which used to be an old clover mill, and which is situated at the point where Cedar Run empties into the Yellow Breeches, and is furnished with water-power by Cedar Run from a dam across that run, just above its mouth; do you know the building?

Ans. I know the building.

Q. 5. Have you been there since it was occupied by Mr. Drawbaugh for a machine shop? and if so, state when, what led to the visit, and who went with you?

Ans. I was once, on Sunday the third day of March, A. D. 1878, at the suggestion of my uncle, George W. Mumper, in his company, accompanied also by his little daughter, Mary Mumper, and my cousin, Mr. Mumper J. Baily.

Q. 6. State where you were staying at the time, how you came to be at your uncle's on that day, and what was the suggestion which led to the visit.

Ans. I made a visit to Dillsburg, York county, my native town, to Mr. Mumper Baily, of Dillsburg, and said to him that I would like to go to see Uncle George and his family, and asked him if he would not like also to go and see them, and asked him whether he wouldn't drive me down, which he did on Sunday morning, the 3d of March, 1878; and after dinner Uncle George Mumper told us that Mr. Daniel Drawbaugh was working on a clock that was to run without being wound up—I don't pretend to give the exact language, but the substance—and asked us whether we wouldn't like to go and see it. We assented, and he hitched up a horse and spring wagon, and we went over together, as I have before stated.

Q. 7. Did you meet Mr. Drawbaugh at his shop, and did he recognize you, and did he show you his clock and explain it to you?

Ans. Yes, sir; I met him in his shop; he recognized me and greeted me very cordially, and showed us his clock.

Q. 8. State whether or not he expressed any particular gratification at having an opportunity to show and explain the clock to you particularly, and if so, state the substance of what he said on the subject.

[*Objected to by Mr. Hill as immaterial and irrelevant.*]

Ans. After the ordinary greetings and salutations, and introduction of Mr. Baily, who then met him for the first time, my uncle, Mr. Mumper, stated the object of our visit more particularly to be to have shown us the clock he was working on, when he said in effect that he would be glad to show it and explain his invention, and said to me: "I know you will understand everything I say," referring to conversations that I had had with him in the past; this was the substance of the remark; I cannot recall it in terms.

Q. 9. How long did you stay at his shop on that occasion, and how

much of that time did he occupy in explaining to you the clock and the nature of its operation?

Ans. We stayed there, I should say, three quarters of an hour—probably longer, not exceeding an hour. He was standing in front of a long work-bench, and began to explain the principle on which the clock was to run, which occupied some time—just how long I am not able to say—stating that he was utilizing magnets; and then began to talk about the poles of the magnet, and was very enthusiastic in his manner, and in that conversation referred to the attracting and repelling force of the respective poles, and occupied probably ten or fifteen minutes there in talking in this way. He then showed us a clock, not yet completed, probably six feet high, the front of which was open. As I remember, there was considerable space in front of the clock, intended to be supplied with glass. The pendulum consisted of four or more rods, on which there was a large bulb some distance below the middle, with a brass front, not unlike those I have seen on other large clocks, except that, probably, it was larger than any that I had before taken any notice of. Near about the middle of the vertical rods—as I remember, on the left hand side—there was a magnet attached, the poles pointing to the left; and there either was a magnet in the body of the clock opposite, or he told us that there was one to be placed there, so that the clock would run by the attracting and repelling forces of the poles of the two magnets. That was all up to that point, except that he was talking earnestly all the time, and we were, of course, listening attentively. I don't know that I asked him many questions, nor can I recall any just now; but I remember that Mr. Baily was very much interested, and asked him a number of questions, but I am unable to recall just what they were. Besides the one clock that I have spoken of, which gave promise of being a handsome piece of work when completed, I remember there was a smaller one that he had experimented on; and there was standing there also an old-fashioned eight-day clock, without any works in; and I have a distinct impression that after he had shown us this more handsome incompleted clock, he took us to another small room in the building, in which there was a clock that he said had been run by his invention, as he claimed, keeping most excellent time for about a year, but I can't say positively whether it was running that day or not; I have an impression that it was, but can't say positively.

Q. 10. Did he say anything to you or in your hearing about electric speaking telephones?

Ans. No, sir.

Q. 11. Did he show you any electric speaking telephones?

Ans. No, sir.

Q. 12. Please to look at the instruments now shown you marked "F," "B," "C," "C reproduced," "I," "A," "E," "D," "G," "O," "K," "L," "M," "N," "P," "Q," "H," "J," and state whether you ever saw any of them at Mr. Drawbaugh's shop.

Ans. I never did, except this magnet (indicating magnet on "C reproduced") or a similar magnet I may have seen, as the sight of it calls to my mind that he had a magnet in his hand that he pointed to occasionally in speaking of his clock invention. I therefore would not like to swear positively that I had never seen this connected magnet before.

Q. 13. You have stated that he remarked in substance that he was glad to have an opportunity to explain the so-called clock invention to you because he was aware that you would understand what he had to say; did he, or did he not, while making the explanation and exhibiting the clock, appear to regard you as an intelligent and sympathetic listener?

[*Objected to by Mr. Hill as leading, calling for mere opinion and incompetent.*]

Ans. Yes, sir: the latter part of the question I think I can emphasize with propriety, as I was a sympathetic listener.

Q. 14. You know, of course, the tone of feeling which existed between you and Mr. Drawbaugh respectively during that visit and which he manifested by the tenor of his conversation; and I therefore wish to ask you a question which that knowledge will aid you to answer. If Mr. Drawbaugh for eight or ten years prior to that time had been engaged in inventing and constructing electric speaking telephones almost to the exclusion of all other work, as if impelled thereto by some supernatural power and had had his whole heart and soul wrapped up in that work, and had, at the time of your visit, eight or ten electric speaking telephones, which were practically operative instruments of excellent quality, fitted up and ready for use, was the nature of your intercourse on that day such that he would, or would not have mentioned the subject or shown them to you?

[*Objected to by Mr. Hill as leading, hypothetical, argumentative, incompetent, calling for mere opinion and requiring, not that the witness should state a fact, but that he shall assume the place of the Court and sit in judgment in this suit; and not only that, but shall give his judgment, not upon facts ob-*

served by him, but because he did not see nor hear within a certain hour several years ago things which it is assumed might possibly have been seen or heard under the conditions stated.]

Ans. I certainly think he would have done so.

Q. 15. Has Mr. Drawbaugh ever applied to you with a view of availing himself of your testimony in this case; if so, state when and where it was and what passed between you on that occasion?

Ans. I apprehend that was his object. He spoke to me one day in the depot at Harrisburg, as near as I can fix the time, in the latter part of November, or beginning of December, 1881. On meeting me in the depot, he said to me he had been to York, and either said he had called at my office to see me, and found I was out of town, or else had been told I was not in town. And referring to the visit my uncle, Mr. Mumper, and myself had made—I don't remember that he mentioned any other persons, as the time was short, and as he could have seen I was somewhat hurried—asked me whether I remembered of his saying anything to me upon the occasion of that call about a talking-machine or telephone; and I replied, that after I learned from the newspapers of the contest between his company and the Bell Telephone Company, I tried to recall what took place, for the purpose of ascertaining whether I would be of any benefit to him; and my recollection was that there was nothing whatever said about communication of sound from one point to another in any way.

Cross-examined by Mr. Hill:

Cross-Q. 16. How do you fix the time of that visit as the third of March, 1878?

Ans. On last Friday evening a week Mr. John C. Comfort called at my residence, in York, and asked me whether or not I remembered having made a visit to Mr. Drawbaugh's with Uncle Mumper, and my impression during that conversation was that the visit was made in the spring of 1878. I had but a short time to give him that evening, as I had an engagement which was to begin within a short time after he called. I said to him I would consult my diary for several years back, on going to my office the next morning; that I knew it was on a Sunday, and that in all probability there would be an entry of expenditures that would enable me to fix the exact date. I found no entry for March 4, 1878, which was Monday, but the next entry is "5th, at Uncle Mumper's, $8;" that is the entry in my diary. That confirmed me in my

opinion. And then there are a number of other circumstances that convince me that it was in the spring of 1878 that I made that visit. My recollection is, that on my return I did not go to my office on Monday evening, but made the entry as I have stated, on Tuesday, the fifth of March.

Cross-Q. 17. During that interview at Mr. Drawbaugh's shop, was Mr. Drawbaugh in your presence and hearing all the time that your party were there?

Ans. According to the best of my recollection and belief; yes, sir.

Cross-Q. 18. You have testified in substance that when Mr. Drawbaugh was proceeding to explain his electric clock, he expressed his gratification at your presence, because you would be able to understand his explanations, referring, as you state, to your previous conversations with him; did you mean the conversations with him in the winter of 1859 and 1860, as referred to in your second answer, when he and you were accustomed to talk about philosophy and chemistry and kindred subjects?

Ans. I mean the winters of 1859 and 1860, 1860 and 1861, 1861 and 1862, as I taught three different schools those three different winters, in the same range of country, and not far distant from Eberly's Mills, or Milltown.

Cross-Q. 19. Did Mr. Drawbaugh, on your 3d of March visit, mention those old conversations between you and him, or did you infer from his manner that he had them in mind?

Ans. He referred to our intercourse in a general way, during the times I have stated, and may have had an exaggerated idea of my ability from the beginning of our acquaintance, or very nearly so, from the fact that I succeeded my brother, Professor S. B. Heiges, who had then, and has now, considerable reputation as a scientific man, and who had taught several years at Cedar Run school, and had brought the school up to a high standard of excellence for a country school.

Cross-Q. 20. From Mr. Drawbaugh's assumption that you would readily understand his explanations, coupled with his reference to your intercourse from sixteen to nineteen years previously, I infer that in that early intercourse you and he had discussed the subject of electricity; am I right?

Ans. Yes, sir.

Cross-Q. 21. Was he a good deal interested in electricity at that early time, so far as you remember?

Ans. Yes, sir; I regarded him as an enthusiast on the subject of physics, at that early time—as a man more than ordinarily interested in physics, as we meet them in the country, generally; and he often asked me what the books said about thus and so, stating things that he had been revolving in his mind.

Cross-Q. 22. Have you any present recollection of his ever suggesting to you at that early period the possibility of transmitting sound by electricity?

Ans. No, sir; I have no such recollection.

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me, this 5th day of February, 1883.

FRED. M. OTT,
Examiner.

GEORGE W. HEIGES.

Recess for lunch until 2.30, P. M.

FEBRUARY 5, 1883, 2.30, P. M.

Examination resumed pursuant to adjournment.

Present, same counsel.

MUMPER J. BAILEY, *being produced, sworn, and examined, saith:*

Examined by Mr. Storrow:

My age is thirty-nine years; residence Dillsburg, York county; occupation grain and coal dealer.

Q. 1. Are you a cousin of Mr. George W. Heiges, of York, and a nephew of Mr. George W. Mumper, of Lower Allen township, Cumberland county, Penna.?

Ans. Yes, sir.

Q. 2. Mr. Heiges has just testified that on Sunday, March 3d, 1878, you drove him from Dillsburg to Mr. Mumper's, and that you and he and Mr. Mumper visited Mr. Drawbaugh's shop that afternoon, and that Mr. Drawbaugh then and there showed and explained an electric clock; do you remember the fact of that visit?

Ans. Yes, sir.

Q. 3. If you have anything written at the time which serves to fix the date of that visit please state what it is, and show it to the examiner and the counsel.

Ans. I have; it is in an autograph album of my cousin, Lula Mumper, a daughter of Mr. George W. Mumper; I produce the album.

Q. 4. In whose handwriting is the page of the album you refer to, and when and where was it written?

Ans. It is in my own handwriting, and written at George Mumper's, on March 3, 1878.

(*Mr. Storrow puts in evidence a copy of the page referred to, which is as follows:*

"COUSIN LULA: May you have a happy and prosperous life; is the wish of your cousin, "M. J. BAILEY.
"DILLSBURG, PA., *March 3rd*, 1878.")

Q. 5. Do you remember whether or not your visit to Mr. Drawbaugh's shop, with Mr. Mumper and Mr. Heiges, was on the same day when you wrote that in the album?

Ans. It was.

Q. 6. State whether or not you have ever been at Mr. Drawbaugh's shop on any other occasion.

Ans. I have not.

Q. 7. How long did your party stay there on that visit?

Ans. About three quarters, or an hour.

Q. 8. State whether or not Mr. Drawbaugh showed you his clock at that time.

Ans. He did.

Q. 9. State whether or not he gave any lengthy explanation of how it worked and what made it go?

Ans. He did.

Q. 10. Were his explanation and conversation addressed equally to all the party, or were they addressed to one of the party more than to the others?

Ans. They were addressed to one of the party more than to the others.

Q. 11. Which one?

Ans. Mr. Heiges.

Q. 12. Did Mr. Drawbaugh mention the subject of electric speaking telephones during that visit?

Ans. No, sir.

Q. 13. Did he show you any electric speaking telephones during that visit?

Ans. No, sir.

Q. 14. Please to look at the instruments now shown you marked

"A," "B," "C," "C reproduced," "D," "E," "F," "G," "H," "I," "J," "K," "L," "M," "N," "O," "P," "Q," and state whether you ever saw any of them at Mr. Drawbaugh's shop?

Ans. I cannot recall any of them—at least not to my knowledge; I have seen something similar to the magnet on "C reproduced."

Cross-examined by Mr. Hill:

Cross-Q. 15. Have you talked the matter over with your cousin, Mr. Heiges?

Ans. Yes, sir; I spoke to him with regard to the matter.

Cross-Q. 16. Have you talked it over with Mr. Mumper, your uncle, or his daughter, who accompanied you?

Ans. I have with Mr. Mumper, but not with his daughter.

Cross-Q. 17. Have you talked it over with Mr. John C. Comfort?

Ans. I have not.

Cross-Q. 18. Do you recollect whether Mr. Drawbaugh said anything about talking-machines on the occasion of your visit to Mr. Drawbaugh's shop?

Ans. I do not.

Cross-Q. 19. How far is Mr. Mumper's house from Mr. Drawbaugh's shop, by the road which you took on that day?

Ans. I suppose about a mile and a quarter.

Cross-Q. 20. How far did you travel on that day to get from your starting-place to Mr. Mumper's house?

Ans. About thirteen miles.

Cross-Q. 21. Did you return home the same day?

Ans. The same day and evening.

Cross-Q. 22. Did Mr. Heiges accompany you from Dillsburg to Mr. Mumper's, and from Mr. Mumper's back to Dillsburg?

Ans. I took him to Mr. Mumper's, but not back home again with me.

Cross-Q. 23. Referring to the distance from Mr. Mumper's to Drawbaugh's shop, is it not nearly two miles, instead of a mile and a quarter?

Ans. I think not.

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me, this 5th day of February, 1883.

FRED. M. OTT,
Examiner.

M. J. BAILEY.

GEORGE W. MUMPER, *being produced, sworn, and examined, saith:*

Examined by Mr. Storrow:

My age is fifty-four; residence, Lower Allen township, Cumberland county, Penna; occupation, farming.

Q. 1. How far do you live from Eberly's Mills?

Ans. About a mile and a quarter.

Q. 2. How long have you lived on the same place where you live now?

Ans. Twenty eight years.

Q. 3. How long have you known Mr. Daniel Drawbaugh, of Eberly's Mills?

Ans. I suppose twenty-five years.

Q. 4. Are Mr. George W. Heiges, of York, and Mr. Mumper J. Baily, of Dillsburg, nephews of yours?

Ans. Yes, sir.

Q. 5. They have testified that on Sunday, March 3d, 1878, they drove over from Dillsburg to your house, and after dinner you took them to Mr. Drawbaugh's shop; do you remember that occasion?

Ans. Yes, sir.

Q. 6. Was it at your suggestion or at their request that the visit was made to Mr. Drawbaugh's shop?

Ans. It was my own suggestion.

Q. 7. What led to your making the suggestion, and what was the suggestion you made to them?

Ans. I proposed to take them there to see the clock that Mr. Drawbaugh had invented, that was to run without winding; I thought that Mr. Heiges would like to see it, as he was acquainted with Mr. Drawbaugh from having taught school in that neighborhood.

Q. 8. How long did you stay at Mr. Drawbaugh's shop on that visit?

Ans. I suppose about three quarters of an hour—may be a little more.

Q. 9. Did Mr. Drawbaugh show the party an electric clock and give explanations of it on that visit?

Ans. Yes, sir; after I got there I shook hands with him, and I introduced Mr. Baily—Mr. Heiges, of course, knew him—and I said we would like to see the clock, and he said he would be delighted to show it to us; and he did, too, and explained it to us—more particularly to Mr. Heiges, as he was acquainted with him.

Q. 10. Did Mr. Drawbaugh at that visit say anything about electric speaking telephones or talking-machines?

Ans. No, sir.

Q. 11. Did he show you any such instruments at that visit?

Ans. No, sir.

Q. 12. Please look at the instruments now shown you marked "A," "B," "C," "C reproduced," "D," "E," "F," "G," "H," "I," "J," "K," "L," "M," "N," "O," "P," "Q," and state whether you ever saw any of them at Mr. Drawbaugh's shop?

Ans. I never saw any of them; I saw something like this, (indicating magnet on C reproduced,)—the magnet in the clock; that was the only one that I saw.

Q. 13. What public offices have you ever held since you live where you live now?

Ans. The first office was supervisor; the next office I was elected to was school-director; I have been school-director for thirteen years, out of which I have been president of the board for twelve years. When my present term expires I will have served continuously for fifteen years. I was elected to the Legislature in 1874, and served two years, being the sessions of 1875 and 1876.

Q. 14. How extensive is your acquaintance with the people of Lower Allen township?

Ans. I think I know every person in the township, unless it might be comers and goers in the township for just one year that I might not know. I think I know every one else in the township.

Q. 15. Have you been somewhat active in politics in the township?

Ans. Yes, sir; on election days I am generally at the polls the whole day, unless I am sick. I make it my business to be there.

Q. 16. Have candidates from outside the township been in the habit of obtaining your assistance to go around with them and introduce them, when making their canvass?

Ans. Yes, sir; I go around with them sometimes, and others write to me that they are coming, and if I can't go with them I try to get a man to go with them, to introduce them around.

Q. 17. Have you been in the habit of going to Mr. Drawbaugh's shop, from time to time; and if so, please give me some idea of about how often?

Ans. Generally about election time I would get down there to see if

he was coming to the election, if I didn't see him in town. I was always anxious to get them all out to the election, and so would look them up.

Q. 18. Did Mr. Drawbaugh and you belong to the same political party, or not?

Ans. Yes, sir.

Q. 19. Did you ever hear of Mr. Drawbaugh being so poor that his family were not provided with suitable clothing?

[*Objected to as leading, and calling for hearsay.*]

Ans. No, sir; I did not.

Q. 20. Did you ever hear of his being so poor that his family didn't have the necessaries of life?

[*Same objection.*]

Ans. No, sir; I did not.

Q. 21. Did you ever hear of his being so poor that sometimes at night he and his family wouldn't know where their breakfast the next morning was to come from?

[*Same objection.*]

Ans. No, sir.

Q. 22. From your knowledge of the man and his surroundings, do you believe that he was so poor at any time within the last dozen years that his family lacked suitable food and clothing?

[*Objected to by Mr. Hill, as assuming and calling for mere opinion.*]

Ans. He might have been a little short sometimes; I myself get short sometimes, but I think he must have had *some* money, at different times

Q. 23. Is Cumberland Valley and Lower Allen township a rich farming country, or the reverse?

[*Objected to as immaterial and irrelevant.*]

Ans. It is a good farming country.

Q. 24. I suppose, from your long residence there, and your extensive acquaintance, that you have a knowledge of the amount of property and wealth of the principal persons in your neighborhood, and I want to ask you about some of them. Take Mr. Fred. Sheeley; how much is his farm considered worth, and how much is he considered worth?

[*Objected to by Mr. Hill, as immaterial, irrelevant, incompetent, and calling for mere hearsay and opinion.*]

Ans. The farm he lives on, he told me this fall, he was offered three hundred dollars an acre for. There are one hundred acres, or a little over, in the farm; that would make $30,000. He did own three other ones, but recently sold two of them to his sons. He owns two yet; the two he sold to his sons were not worth so much money. He might be worth $50,000 or $75,000.

Q. 25. Take Mr. John Sheely; how much is he worth?

[*Same objection.*]

Ans. Frederick Sheely's brother; he might be worth $20,000 or $30,000, for what I know.

Q. 26. What are Mr. S. M. Hertzler's farms worth, and what is he worth?

[*Same objection.*]

Ans. He might be worth $30,000 or $40,000.

Q. 27. What is Mr. William R. Gorgas' farm worth, and what do you consider him worth?

[*Same objection.*]

Ans. I suppose he would be worth $80,000 or $90,000; the farm that lays near Milltown there might bring $250 an acre; there may be 140 acres, more or less; it is a number one farm.

Q. 28. What did Mr. William Sadler use to be worth along from 1870 to 1875, and what was his farm worth?

[*Same objection.*]

Ans. I suppose it would have been at that time worth maybe $20,000.

Q. 29. When Mr. John Hursh moved away to Kansas what was he worth, and what was his farm worth?

[*Same objection.*]

Ans. It was supposed that he took along about $30,000 with him.

Q. 30. Is Mr. Henry S. Rupp, the florist, a man pretty well off or not?

[*Same objection.*]

Ans. Yes, sir; he is very well fixed.

Q. 31 I judge from the figures you have given that the farms in that neighborhood are worth $200 an acre or upwards; is that the fact?

[*Same objection.*]

Ans. Yes; some of them are worth over that and some are not worth that. Mr. McCormick owns two farms, adjoining mine, that are worth

more than $200; I would not thank anybody to offer me $200 an acre for mine; Martin Best owns about four hundred acres, but a good deal of his land is not worth that much.

Q. 32. Please state how far from Eberly's Mills these various persons live?

[*Objected to by Mr. Hill, as immaterial and irrelevant.*]

Ans. Fred. Sheely just joins the town of Eberly's Mills; his land runs pretty close to the town; John Sheely lives about three miles away; William R. Gorgas' farm is about a half a mile from the town; that is the buildings; the fields are closer; William Sadler's farm is a mile and a half, any how, away; it would be two miles to John Hursh's farm; Henry Rupp's is about two miles; Martin Best's farm, the one he lives on, is about a half a mile, or in that neighborhood, from the town; William R. Gorgas lives in Harrisburg now; I think he moved since 1874; I think he moved in the fall of the year.

Adjourned until Feb. 6, 1883, at ten, A. M.

[*At Mr. Storrow's suggestion, Mr. Hill consenting, the Examiner allows Mr. Daniel Drawbaugh to take charge of the mouthpieces of "L" and "P" instruments for the purpose of repairing them, they having been broken in transportation from place to place during the taking of this testimony. They have been returned before this is printed.*]

FEBRUARY 6, 1883, 10, A. M.

Examination resumed, pursuant to adjournment.

Present, Mr. Storrow for complainants and Mr. Hill for respondents.

Examination of George W. Mumper, by Mr. Storrow, continued:

Q. 33. Have you any definite knowledge when Mr. Gorgas moved?

Ans. No, sir; except that it was in the fall of the year, and was after 1874; it might have been 1875 or 1876; I couldn't say.

Q. 34. If Mr. Drawbaugh had had in his shop for six or eight years before they had been heard of elsewhere, so remarkable a thing as a speaking telephone or talking-machine, by which conversation could be carried on between different places along a wire, and had shown it freely to a dozen or twenty people, would it or would it not have become generally known in that community?

[*Objected to as hypothetical, calling for mere opinion, and incompetent.*]

Ans. It would have; yes sir.

Q. 35. Was your acquaintance with the people of that community and their affairs such that if it had been generally known in the community for a number of years before speaking telephones were heard of elsewhere, that Mr. Drawbaugh had a talking-machine, by which conversation could be carried on from one place to another along a wire, you would or would not have known of it?

[*Objected to by Mr. Hill for the same reasons as last question, and as argumentative and leading.*]

Ans. Yes, sir; I would have known of it.

Q. 36. You have mentioned the visit which you made to Mr. Drawbaugh's shop on March 3d, 1878, and have stated that nothing was then said about talking-machines; had you ever before that time heard that Mr. Drawbaugh had at his shop any talking-machine?

Ans. No, sir.

Q. 37. If Mr. Drawbaugh, long before speaking telephones were heard of elsewhere, had had at his shop a talking-machine, by which conversation could be carried on from one place to another along a wire, and had represented that there was a fortune in it, and that it was going to supersede the telegraph, and had demonstrated the usefulness of the machine by actual practical use by various persons, and desired to obtain a few hundred dollars to patent it, offering to give a half or other part interest to those who would furnish the money, would he or would he not have been able to obtain it from his acquaintances and the people in the neighborhood.

[*Objected to by Mr. Hill as leading, hypothetical, calling for mere opinion, and incompetent; and respondents' counsel calls the attention of the Court to the fact that in the face of the repeated objections made, the complainants' counsel persists in this line of interrogatories, well knowing them to be utterly in violation of all rules of evidence, and worthless.*

Complainants' counsel states that he and his associates consider this line of interrogation competent; very material under the circumstances of the case; and directly responsive to an issue made by the defendants' answer, and attempted to be supported by the defendants' evidence.]

Ans. Yes, sir; he would.

Q. 38. I understand that your name is good at the bank for any moderate amounts that you are willing to sign for; have you been in the habit of indorsing for your friends and acquaintances?

[*Objected to by Mr. Hill, as immaterial and irrelevant.*]

Ans. Yes, sir.

Q. 39. If Mr. Drawbaugh had come to you, and shown you such a machine, and made such representations as are referred to in the 37th question, would you, or would you not, have been willing to indorse for him to enable him to raise fifty or a hundred dollars to patent such an invention?

[*Same objection by Mr. Hill as made to question* 37, *and same reply by Mr. Storrow. Complainants' counsel also refers to Christian Eberly's* 29*th answer, respondents' printed record, page* 122.

Mr. Hill rejoins that the 29*th question, page* 122, *respondents' record, is a very different style of a question from those now objected to.*]

Ans. Yes, sir; I would have indorsed for him without showing me machinery, for fifty dollars.

Q 40. Did any of the Ditlow family work for you within the last twelve years; and, if so, when and where? Please refer to your account-book for the dates.

[*Objected to as immaterial and irrelevant.*]

Ans. There was Joseph Ditlow, "1872, July 17, commenced at $15 per month." That is the first entry under his name. The last entry under his name on the same page is "November 13, by cash on settlement, $14 02; settled all accounts up to date, November 13th, 1872."

On the previous page is an account with Abraham Ditlow. The first entry is "May 24, commenced at $10 per month." The account is carried part way down that page, the cash payments added up, and the amount carried over to the page after Joseph's account, where it is continued. The last entry on that page is "by cash on settlement, $12 65; settled all accounts up to date, November 13th, 1872." In the same book is an account with Abraham Ditlow for another year, beginning "1874, April 27, commenced work at $16." The last entry on that page is "settled all accounts up to date, February 5, 1875." The memorandum of settlement also contains this: "By 7 months' work at $16 per month." The next account of Abraham Ditlow begins "1875, April 15th, commenced at $16 per month." The memorandum of a settlement at the bottom of that page credits him "By 5½ months' work, $88; by corn-husking, $19 49; by one half day, $1 50."

David Ditlow: The first entry is, "March 13, commenced at $15 per

month." The memorandum of settlement at bottom of page says, "By eight months' work, $15 per month, $120." The year is not given on that page; the next page contains the date "1872."

Alfred Ditlow: On the same page as Abraham Ditlow's first account, "Commenced at $8 for five months." In 1876 he is credited for days work, the last entry being "Settled all accounts up to date, December 11, 1876." This work in 1876 was partly painting the barn and partly harvesting and corn-husking. During all the work by the month these parties lived at my house.

Q. 41. Has Mr. Drawbaugh ever been to see you with reference to obtaining your testimony in this suit; if so, state when it was, who was with him, and what passed between you?

Ans. Yes, sir; Mr. Drawbaugh and Mr. Jacobs came to see me at my house, and one of them—I think it was Mr. Drawbaugh—asked me whether he showed me the telephone or talking-machine at the time Mr. Heiges, Mr. Bailey, and myself were there on a Sunday. I told him he didn't tell me about it, but he might have told Mr. Heiges about it, as he talked most to him at the time, and that he would better go and see him in York. That was about all the conversation we had.

Cross-examined by Mr. Hill:

Cross-Q. 42. Referring to your interview with Mr. Drawbaugh and Mr. Jacobs; did Mr. Drawbaugh ask you whether he showed the telephone at the time Mr. Heiges, Mr. Baily, and yourself visited his shop, or did he ask you whether he ever showed you the telephone?

Ans. He asked me whether they showed it to me the day we were at his shop.

Cross-Q. 43. Was that the only time Mr. Drawbaugh ever spoke to you with regard to your recollection about his telephone?

Ans. Yes, sir; I believe that was the only time; he might have spoken to me after he came back from seeing Mr. Heiges, I don't recollect about that; I might have met him and asked him what Mr. Heiges had said; I am not sure about that.

Cross-Q. 44. Did you not once have an interview with Mr. Drawbaugh in the market at Harrisburg, prior to the visit of Mr. Drawbaugh and Mr. Jacobs to your house, as you have testified; and was not that interview at the Harrisburg market the first occasion on which Mr. Drawbaugh spoke to you with regard to your memory of his telephone?

Ans. No, sir; I don't remember of ever talking to him there.

Cross-Q. 45. To aid your recollection, I will call your memory more definitely to the precise spot where the interview in Harrisburg took place, to wit, in Market street, in front of Hummel's grocery store; do you remember the occurrence?

Ans. No, sir; I do not.

Cross-Q. 46. I will aid your memory a little further. Don't you recollect having an interview at the time and place referred to in my last question, prior to the visit of Jacobs and Drawbaugh to your house, and in which Mr. Drawbaugh asked you if you ever saw his telephones or talking-machines, to which you replied in substance that you did not remember distinctly, but thought you had seen them, although you could not remember the time when, and you called the attention of Mr. Drawbaugh to the visit which you, Mr. Heiges, and Mr. Bailey had made to his shop, and said that it might have been at that time that you saw the telephones, but that you could not remember whether it was, or not?

Ans. No, sir; I do not.

Cross-Q. 47. Are you willing to swear whether, or not, the interview and conversation referred to in my last question did take place substantially as my question states?

Ans. No, sir; I am not willing to swear to that.

Cross-Q. 48. Did Mr. Drawbaugh never, within the six years prior to 1876, ask you for the loan of a small sum of money, which you refused?

Ans. I don't remember that he did. I am not positive. For if he did, and I had had it, I would have given it to him; but I don't remember that he did. I have indorsed for worse men than Mr. Drawbaugh. My sympathies are with Mr. Drawbaugh at this time. I am sorry he didn't show me his machines.

[*All the above answer after the word "positive" objected to by respondents counsel as argumentative, in part hypothetical, not responsive, and mere opinion.*]

Cross-Q. 49. I will aid your memory a little; do you not remember Mr. Drawbaugh's coming to you in the corn-husking season of the year and having an interview with you in your corn-field, south of your barn and a few rods distant from it, when you had some men there husking corn, and then and there asking you for the loan of a small sum of money, which you refused?

Ans. No, sir; I don't remember it.

Cross-Q. 50. Did not Mr. Drawbaugh at one other time apply to you through Mr. Alfred Ditlow for the loan of a small sum of money, which you refused him?

Ans. No, sir.

Cross-Q. 51. Did not Mr. Alfred Ditlow at one time come to you to borrow a small sum of money for Mr. Drawbaugh, and state to you that Mr. Drawbaugh had applied to him for a loan, but he could not accommodate him, because he had lent all his money to Mr. Levi Merkel; but that he had suggested to Mr. Drawbaugh that perhaps you would accommodate him, and had come at his request to see if you would do so?

Ans. No, sir.

Cross-Q. 52. When you used to go around electioneering or seeking the voters on political business, did you always go to Mr. Drawbaugh's shop, or did you frequently meet him in the village or on the road, or go to his house, and there transact your business with him, instead of going to his shop?

Ans. I met him out in town sometimes, and if I didn't meet him there, I would go to his shop; I never went there on any except political business; I never had any work done there that I remember; I don't include the time Mr. Heiges, Mr. Bailey, and myself went there; that time we went to see the clock.

Cross-Q. 53. Mention all the inventions of Mr. Drawbaugh that you ever heard of before the beginning of this suit, in September, 1880?

Ans. There was a stave-cutting machine; I ain't positive that he was the inventor of it, but I heard that he was. And there was a molasses faucet; then a carpet-rag sewer, that I never saw, though I believe one of the Ditlow boys had it at my house. I guess that is all the patents that I ever heard that he invented. There was a mill bush and other patents, but I don't know whether they were said to be his invention or not; and then there was this clock; if you call that a patent, I don't know.

Cross-Q. 54. Have you ever talked with Mr. John C. Comfort about this case?

Ans. Yes, sir.

Cross-Q. 55. How many times, and when?

Ans. On Inauguration Day, January 16th, 1883, and then when he came to my house to get this book, to get the dates of the Ditlows.

Cross-Q. 56. Had you never talked to Mr. Comfort about this case prior to the 16th of January, 1883?

Ans. I think there was one time that Mr. Drawbaugh told me that Comfort was working against him, and asked me to talk to John about it; and I did talk to John, and tell him that he ought'nt to work against Mr. Drawbaugh in his telephone business; I didn't know then that he was really working against Mr. Drawbaugh, only what Mr. Drawbaugh said.

Cross-Q. 57. Instead of Mr. Drawbaugh asking you to talk to John about it, was it not you who voluntarily offered to talk to John about it?

Ans. No, sir; because I didn't know anything of it till Mr. Drawbaugh mentioned it to me, that John was against him.

Cross-Q. 58. Did not Mr. Drawbaugh first mention it to you, and then you offer of your own accord to speak to Mr. Comfort about it?

Ans. The first part of the question I will answer yes, and the last part no.

Cross-Q. 59. Did not Mr. Drawbaugh complain of Comfort's methods of working against him, instead of the mere fact that he was working against him?

Ans. Yes, sir, Mr. Drawbaugh complained about Comfort's working against him; I don't know whether he used methods or facts; I am not positive about that.

Cross-Q. 60. When Drawbaugh and you were talking together about Comfort, was anything said about Comfort's character and general reputation?

Ans. Yes; we might have talked something over that. I think that I wanted Mr. Drawbaugh to vote for some one—whether it was Comfort I don't know—and he then mentioned about his working; I don't think Comfort was running at that time, though. He said he wouldn't vote for such a man as Comfort; but whether Comfort was running for school-director then, or not, I don't remember.

Cross-Q. 61. What did you say about Comfort's character?

Ans. I don't think I said anything about his character; Mr. Comfort and I were not on the best of terms for the last ten years or more; we run an opposition in the county as candidates for the Legislature.

Cross-Q. 62. When you so ran, who was elected?

Ans. I was.

Cross-Q. 63. You state that you had an interview with Mr. Comfort

on inauguration day, January 16, 1883; where was that interview, and who was present besides you and Mr. Comfort?

Ans. At the United States hotel, in Harrisburg; Mr. Storrow was present.

Recess for lunch until 2.30, P. M.

FEBRUARY 6, 1883, 2.30, P. M.

Examination resumed, pursuant to adjournment.

Present, Mr. Smith and Mr. Storrow for complainants, and Mr. Hill for respondents.

Cross-examination of George W. Mumper, by Mr. Hill, continued:

Cross-Q. 64. Have you, Mr. Comfort, and Mr. Drawbaugh for a great many years past all belonged to the same political party, or to different parties?

Ans. All to the same party, I believe.

Cross-Q. 65. When you and Mr. Comfort both ran for the Legislature, did you both run as Democrats?

Ans. For the nomination we did.

Cross-Q. 66. Then you meant in a previous answer that you and Mr. Comfort competed for the nomination as candidates of the Democratic party, and you obtained the nomination over him; is that what you mean?

Ans. Yes, sir; but there were seven or eight candidates running, although there were only us two from our township.

Cross-Q. 67. Do you know whether there has been any hard feeling between Mr. Drawbaugh and Mr. Comfort for a number of years past?

Ans. I do not.

Cross-Q. 68. When Mr. Heiges and Mr. Bailey visited Drawbaugh's shop with you, did they come first together to your place, and then afterwards go with you to Mr. Drawbaugh's shop, and then return to your house with you?

Ans. Yes, sir.

Redirect by Mr. Storrow:

Q. Q. 69. Are you the president of the school-board of Lower Allen at the present time?

Ans. Yes, sir.

Q. Q. 70. Do you remember the fact of new desks being furnished

for the No. 4 school-house while Mr. D. A. Hamacher was teacher at that school-house?

[*Objected to by Mr. Hill as new matter not referred to in the cross-examination.*]

Ans. Yes, sir; we put in new desks there and to the best of my knowledge it was while Mr. Hamacher taught there.

Q. Q. 71. Please look at the book now on the table before you and state whether it is the secretary's record of Lower Allen township school-board; and if so, read therefrom the order for the purchase of the new desks for that school-house?

[*Same objection.*]

Ans. Yes, sir; that is the book; the minutes of the meeting of December 26, 1874, contain the following: "On motion of J. B. Eberly it was agreed unanimous that 4 school-house be furnished with new desks."

Q. Q. 72. Were you president of the board at that time?

[*Same objection.*]

Ans. Yes, sir.

[*The minute of that meeting states, "The members all present; the president in the chair."*]

Q. Q. 73. Were those desks put into that school-house as soon as they were procured?

[*Same objection.*]

Ans. Yes, sir.

Q. Q. 74. Will you please point out in the same book and read the vote giving the order for the payment for those desks?

[*Same objection.*]

Ans. Yes, sir. The minutes of meeting of May 22, 1875, name George W. Mumper as one of the members present, and state "the president in the chair" and they also contain the following:

"An order was passed in favor of A. B. Shank of $518 75 a note "paid at First National Bank of Harrisburg, being for furniture got at "No. 4 and 6 school-houses."

(*Without waiving any objections respondents' counsel cross-examines de bene esse.*)

Re-cross-Q. 75. By what name was the school at No. 4 school-house generally known?

Ans. Frogtown.

Re-cross-Q. 76. Were you present when the new furniture was put into that school?

Ans. No, sir; I don't think I was.

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me, this 6th day of February, 1883.

FRED. M. OTT,
Examiner.

GEORGE W. MUMPER.

ABRAHAM L. RUPP, *being produced, affirmed, and examined, saith:*

Examined by Mr. Storrow:

My age is forty one; residence, Shiremanstown, Cumberland county, Pennsylvania; occupation, laborer.

Q. 1. Do you know Mr. Daniel Drawbaugh, of Eberly's Mills; and if so, how long have you known him?

Ans. Yes, sir; I have known him about all my life.

Q. 2. Where did you live for ten or a dozen years before the spring of 1870?

Ans. I lived on what is called the Lake Spring farm, or Old Mansion farm.

Q. 3. How far is that from Milltown?

Ans. Between a mile and a mile and a half.

Q. 4. Did you leave there in the spring of 1870; and if so, where did you then go to?

Ans. Yes, sir; I moved to Shiremanstown.

Q. 5. How long did you live there, and where did you next move to?

Ans. I lived there one year and then moved about a half a mile south-west of Shiremanstown into a new house of my own.

Q. 6. When did you next move, and where did you move to then?

Ans. I lived there one year and then moved back to Shiremanstown in the spring of 1872.

Q. 7. How long did you stay at Shiremanstown before you moved away, and what houses did you live in there?

Ans. Three years; I lived in Long's house one year and Buckheimer's two years.

Q. 8. That would bring it to the spring of 1875; where did you move to then?

Ans. I moved back to the new house that I had built about a half mile from Shiremanstown, and where I had lived in 1871.

Q. 9. How long did you stay there, and where did you move to next?

Ans. I stayed there two years, and then moved back to Lake Spring farm.

Q. 10. That would bring it to the spring of 1877; when did you move from there, and where did you move to?

Ans. I moved away from there in the spring of 1882, to Shiremanstown.

Q. 11. Was that Lake Spring farm an old farm long belonging to your family?

Ans. Yes, sir; I was born there.

Q. 12. Then I understand that you lived on the Lake Spring farm up to 1870, and from the spring of 1877 to the spring of 1882, and from the spring of 1870 to the spring of 1877 you lived in various houses in and about Shiremanstown; is that the fact?

Ans. Yes, sir.

Q. 13. Did any of your relations occupy the Lake Spring farm during the seven years from the spring of 1870 to the spring of 1877 while you were not there; if so, who?

Ans. My father lived there until 1871, and my brother-in-law, Harry Neidig, from the spring of 1870 until the spring of 1877, when I moved back there.

Q. 14. Did Mr. Neidig put one of Mr. Drawbaugh's rams in then, while he occupied the place during those seven years?

Ans. Yes, sir.

Q. 15. Was there a ram in there when you left in the spring of 1870?

Ans. No, sir.

Q. 16. How soon after you left there in the spring of 1870 was that ram put in?

Ans. In the fall of 1871 or 1872. I am not positive.

Q. 17. While you lived at the Lake Spring farm where did you generally go for your milling and your mail and your blacksmithing?

Ans. Generally to Milltown.

Q. 18. Did you ever hear a talking-machine at Mr. Drawbaugh's

shop; and, if so, what business took you there at the first time that you heard one?

Ans. Yes, sir; I heard a talking-machine there. To the best of my recollection, it was to have the knives of a cornfodder-cutter ground.

Q. 19. Did you ever see or hear a talking-machine at Mr. Drawbaugh's shop on any other occasion?

Ans. No, sir.

Q. 20. Where did you buy that fodder-cutter that those knives belonged to?

Ans. I bought it from Mr. Hauck at the foundry and machine-shop at Mechanicsburg.

Q. 21. Please to look at the letter which I now show you, and which is as follows:

"Established 1846.

Hauck & Comstock, Founders and Machinists.

"MECHANICSBURG, PA., *January* 10, 1883.

"J. J. STORROW, Esq.,

"DEAR SIR:

"Yours of 9th reed and contents noticed. I mostly kept the Books "of the late firm of S. & G. Hauck, and remember selling Mr. Rupp a "Feed cutter, and find it entered on our day book, (Our Book of original "entry,) as follows:

"1877.

"Dec. 3, Abrm. Rupp, 1 cutter, $40.

"Respectfully yours,

"S. HAUCK."

And state whether the fodder-cutter there mentioned is the one you refer to?

[*Letter objected to by Mr. Hill as mere hearsay and secondary.*]

Ans. Yes, sir.

Q. 22. Have you, within a few weeks, examined in the books of S. & G. Hauck, at Mechanicsburg, the original entry, of which this letter is a copy?

[*Objected to by Mr. Hill on the ground that if anything is to be proved from the books they must be produced and put in evidence in the regular way.*]

Ans. Yes, sir.

Q. 23. Do you remember how long it was after you got that fodder-cutter before you heard the talking-machine at Mr. Drawbaugh's shop?

Ans. I couldn't give the exact length of time.

Q. 24. Can you tell me whether it was during that season or not; what is your recollection on that subject?

Ans. To the best of my recollection it was some time during the winter of 1877 and 1878.

Q. 25. I suppose you have to use a fodder-cutter until the spring is far enough on to bring green food for the cattle—about what time of the year does that generally come?

Ans. I cut fodder for the cattle from early fall until late in the spring.

Q. 26.. When you heard the talking-machine on the occasion you have referred to at Mr. Drawbaugh's shop, what led to his showing it to you if you remember and what part of the shop did you go to to listen to it?

Ans. I don't remember what led to his showing it; I think I went to the basement of the shop.

Q. 27. Was there any talk between you and Mr. Drawbaugh on that occasion about talking-machines or telephones; and, if so, please state what you remember of any talk on that subject?

Ans. I suppose we talked about the machines when looking at them; I don't remember anything particular that we talked.

Q. 28. Did Mr. Drawbaugh take you downstairs to the place where you listened, or did you go down alone?

Ans. Mr. Drawbaugh took me down.

Q. 29. Was the place where you listened well lighted or dark?

Ans. Rather dark.

Q. 30. Was your ear close to the thing you listened at when you listened to hear him speak through it?

Ans. Yes, sir.

Q. 31. Did you take the thing in your hand, and put it up to your ear, or how did you get your ear and the thing close together?

Ans. I put my ear to the machine.

Q. 32. What was the machine supported on?

Ans. I think it was resting on a table or bench.

Q. 33. Did you hear words through it, and how much did you hear?

Ans. I heard Mr. Drawbaugh speak through it. I couldn't tell exactly how much, but not much.

Q. 34. Do you remember the words you heard?

Ans. No, sir.

Q. 35. Did you see the instrument he talked into?

Ans. I have no recollection of seeing it.

Q. 36. Please look at the instruments now shown you, marked "A," "B," "C," "C reproduced," "D," "E," "F," "G," "H," "I," "J," "K," "L," "M," "N," "O," "P," "Q," and state whether you can identify any of them as the instrument you listened at on the occasion you have referred to?

Ans. No, sir; I can't identify any of the machines.

Q. 37. State whether you can recognize any of these instruments as instruments that you ever saw at Mr. Drawbaugh's shop.

Ans. I have no recollection of seeing any of them; that is, any particular one.

Adjourned until February 7, 1883, at ten, A. M.

FEBRUARY 7, 1883, 10, A. M.

Examination resumed, pursuant to adjournment.

Present, Mr. Storrow for complaintants, and Mr. Hill for respondents.

Examination of Abraham L. Rupp, by Mr. Storrow, continued:

Q. 38. Had you or had you not ever heard that Mr. Drawbaugh had a talking-machine before the occasion of the visit you have referred to when you listened at it?

Ans. I never heard of it before I went down.

Q. 39. Had you ever before that visit seen or talked through or listened at any kind of a telephone anywhere; and if so, where?

Ans. I did in Shiremanstown.

Q. 40. Give me some idea of the construction of the telephone you saw or used at Shiremanstown?

Ans. It was an ordinary cigar box; I don't remember whether there was a tin can inside of it or not, but there was a bladder stretched over one end of it and a string fastened in the center of the bladder.

Q. 41. When you first saw that string telephone at Shiremanstown had you any recollection of ever having seen any kind of a telephone before that at Drawbaugh's shop?

Ans. I had not.

Q. 42. If Mr. Drawbaugh had had at his shop for six or eight years before your visit, a talking-machine by which people at different places could talk to each other along a wire, and had been in the habit of

freely communicating knowledge of it to the public, and showing it generally to the people at his shop, do you think that you would or would not have known of it during that time?

[*Objected to by Mr. Hill, as hypothetical, and calling for mere opinion*]

Ans. I think I would have known about it.

Q. 43. If Mr. Drawbaugh, for five or six years before speaking telephones were heard of anywhere else, had had at his shop a talking-machine by which people at different places could carry on a conversation with each other along a wire, and had shown it freely to people, and had them carry on conversation over it, so that they knew it would do what he claimed for it, and had represented that it was going to supersede the telegraph, and that there was a fortune in it, and that he was ready to give a part interest in it to whoever would provide a few hundred dollars to patent it and start making the instruments, would he, or would he not, in your opinion, have been able to raise the money in the neighborhood?

[*Objected to by Mr. Hill, as leading, hypothetical, incompetent, and calling for mere opinion.*]

Ans. He would.

Q. 44. Have you ever had any interest in patents or under any patents; and, if so, what and when, and what did you pay for it?

[*Objected to by Mr. Hill as immaterial.*]

Ans. I bought a patent-right for a churn for two townships, Lower Allen and East Pennsboro. I think I paid a hundred and twenty-five dollars for the patent. It was between 1865 and 1870: I can't give the year.

Q. 45. Do you remember the fact of the Drawbaugh Pump Company or Drawbaugh Faucet Company starting business at the shop now occupied by Mr. Drawbaugh and which formerly was a clover-mill?

Ans. I do.

Q. 46. From the time that company started business down to the time when you used to go there to grind knives for your feed-cutter, did you use to go to that shop from time to time or not?

Ans. I went there occasionally.

Q. 47. Did you go there for the purpose of having repairs or other work done, or for the purpose of mere visits, or both?

Ans. I went there sometimes on business and sometimes from curiosity.

Q. 48. The ledger of the Drawbaugh Company, which was produced by Mr. William Luther Gorgas, has twelve charges against you for small items of work on different days between April, 1868, and April, 1870; did you or did you not generally go down yourself when getting that work done?

Ans. I generally took the work down myself.

Q. 49. Do you know Mr. Samuel M. Hertzler who lives adjoining Eberly's Mills?

Ans. I do; his house is outside the village, about a quarter to a half a mile from the grist-mill, and his farm adjoins the village.

Q. 50. What has been his business for the last dozen years?

Ans. Farmer and liquor dealer; I don't know whether he has been in the liquor business for a dozen of years, though.

Q. 51. Does he grow grapes and make wine and brandy?

Ans. Yes, sir.

Q. 52. Has he been in the habit, for a good many years past, of selling wines and liquors to be consumed on the premises?

Ans. He does not sell by the drink.

Q. 53. Do you know of his having a parlor organ?

Ans. Yes, sir.

Q. 54. Has he ever had more than one?

[*Respondents' counsel requests the examiner to instruct the witness to answer from his own knowledge, and not from hearsay.*]

Ans. Not to my knowledge.

Q. 55. If you remember about when he got it, will you please state

[*Respondents' counsel repeats his request.*]

Ans. I can't give the year—between 1870 and 1876.

Q. 56. Have you been in the habit of visiting Mr. Hertzler's house for a good many years past?

Ans. I have.

Q. 57. Have your visits been confined to his cellar, or have you been in the habit of visiting his family socially?

Ans. Sometimes to visit the family, and sometimes to buy liquor.

Q. 58. Do you know Squire Henry M. Bowman, of Camp Hill?

Ans. I do.

Q. 59. What relation is he to Jacob Kline and Captain Moore, of Camp Hill?

Ans. A son-in-law of Jacob Kline's, and a brother-in-law of Captain Moore's.

Cross-examined by Mr. Hill.

Cross-Q. 60. In your 24th answer you say that to the best of your recollection, it was sometime during the winter of 1877–8 that you saw the telephone at Mr. Drawbaugh's shop; can you not fix the time any closer than that?

Ans. I cannot.

Cross-Q. 61. What parts of the shop were you in on that occasion?

Ans. I was in his working-room and in the basement.

Cross-Q. 62. How long were you in his working-room?

Ans. I don't know.

Cross-Q. 63. What did you see there?

Ans. I seen his electric clock for one thing.

Cross-Q. 64. What else?

Ans. I don't know anything particular; there was tools that he kept in there.

Cross-Q. 65. Was that working-room in the second story, that is, the second floor above the basement?

Ans. Yes, sir.

Cross-Q. 66. Was it a large room or a small one?

Ans. It was the length of the building, with a partition through; I don't know whether he called that a working-room; he done some work in the other part, too; the room that I have reference to was a small room.

Cross-Q. 67. Were you in both the rooms?

Ans. I was.

Cross-Q. 68. Was there any other room on that floor that you were not in?

Ans. I don't think I was in the room he called his office.

Cross-Q. 69. Did you see any telephones in any of those rooms?

Ans. Not to my recollection.

Cross-Q. 70. When you listened down stairs at the telephone and he was talking at the other end of the line, where did you understand that he was?

Ans. I don't know.

Cross-Q. 71. Didn't you have any idea, at the time, as to where he was?

Ans. I might have had some idea at the time, but I have no recollection now; I couldn't see him.

Cross-Q. 72. Did you ask him where he was?

Ans. I don't know whether I did.

Cross-Q. 73. Did the instrument operate by electricity?

Ans. I don't know.

Cross-Q. 74. Didn't you ask him how it operated?

Ans. Not to my recollection.

Cross-Q. 75. You didn't take much interest in the matter, anyhow, did you?

Ans. Not any more than to listen at one end of it.

Cross-Q. 76. Did you ask him what he was going to do with his invention?

Ans. Not to my recollection.

Cross-Q. 77. Was that the first time you had been to his shop in the year 1877?

Ans. I don't know.

Cross-Q. 78. You have no knowledge of having been there before that time, since you moved back to the Lake Spring farm in April, 1877, have you?

Ans. I don't know whether it was the first time or not.

Cross-Q. 79. When the telephones were shown to you here, yesterday, did any of them look familiar to you?

Ans. None of them looked familiar to me.

Cross-Q. 80. How many times have you been in his shop since that time when you got the cutter ground?

Ans. I didn't keep any account of the number of times.

Cross-Q. 81. Give us your best idea about it.

Ans. I couldn't give you any idea of the correct number of times.

Cross-Q. 82. Were you in his shop between the time when you got the cutter ground and the month of September, 1880?

Ans. I had the cutter ground quite a number of times.

Cross-Q. 83. When you went to his shop did you always go there on business?

Ans. Not always.

Cross-Q. 84. How often did you have the cutter ground during the time of the year when it was in use?

Ans. Sometimes twice a week and sometimes once in two weeks.

Cross-Q. 85. Did you always go yourself to get it ground, or did you sometimes send some one else?

Ans. I sometimes sent some one else.

Cross-Q. 86. The first time that you had it ground there, did you go yourself to get it done?

Ans. I am not sure about that, but don't think I did.

Cross-Q. 87. Did you always have it ground there, or sometimes somewhere else?

Ans. I had it ground there, or we ground it ourselves at home.

Cross-Q. 88. Have you talked with John C. Comfort about this case?

Ans. I talked to him when he told me to come down here the first time, or wanted me to come down.

Cross-Q. 89. When and where was that?

Ans. We met on the cars between Shiremanstown and Harrisburg. I couldn't give the day. I suppose it was about three weeks ago.

Cross-Q. 90. Did you ever talk with Mr. Storrow about this case before you came here to testify?

Ans. He asked me some questions about it.

Cross-Q. 91. When and where was that?

Ans. Two weeks ago last Saturday in room 526 Hotel Lafayette, Philadelphia.

Cross-Q. 92. Did you come down there then to testify?

Ans. I didn't come down to testify; no, sir.

Cross-Q. 93. Did you come down at that time by the request of Mr. Storrow or Mr. Comfort?

Ans. Mr. Comfort sent me down.

Cross-Q. 94. (*de bene.*) Did you make any money out of that patent-right for a churn—which you bought between 1865 and 1870?

Ans. I think I came out about square on it.

Cross-Q. 95. (*de bene.*) Did you come out square both on the money you expended and on the time and labor you expended on it?

Ans. I believe I did.

Cross-Q. 96. You have spoken of the old Drawbaugh faucet or pump company that manufactured at Eberly's Mills along from 1868 to 1870 or 1871; was it your understanding that they made, or lost money by investing in patents

Ans. I understood that they lost money.

Cross-Q. 97. You have spoken of Captain Moore and Jacob Kline,

did you know of their being at one time engaged in the manufacture of of a patent axle at Eberly's mills?

Ans. I do.

Cross-Q. 98. Was it your understanding that they made or lost money by their investments in patent-rights?

Ans. From what I understood I suppose they did not make any money at it.

Cross-Q. 99. Can you swear that Mr. Hertzler didn't have a parlor organ prior to 1870?

Ans. I wouldn't like to swear to it; at the same time I am confident that he didn't have it.

Redirect by Mr. Storrow:

Q. Q. 100. Please to reflect a little and see whether it was two weeks or three weeks ago last Saturday that you saw Mr. Storrow; was it before Inauguration day or after?

Ans. I think it was three weeks ago; it was when I was on night turn; it must have been three weeks ago.

Q. Q. 101. Do you remember whether you ever saw at Mr. Drawbaugh's shop a contrivance for ringing bells by electricity or a contrivance for telegraphing?

[*Objected to by Mr. Hill as new matter not referred to on cross-examination and as immaterial.*]

Ans. Yes, sir.

Q. Q. 102. Please to state what you recollect about it.

[*Same objection.*]

Ans. There was a box with a lot of those wires fastened to it; it had a magnet in it; I don't know what else was in it.

Q. Q. 103. Were there any bells connected with it; and if so, what kind of bells?

[*Same objection.*]

Ans. I am not certain about that.

Q. Q. 104. If Mr. Drawbaugh said anything to you about the uses that were to be made of the apparatus, or that could be made of it, please state your recollection of it.

[*Same objection.*]

Ans. I think he said he was going to use it in connection with the present system of telegraphing, or in place of it; I am not sure which.

Re-cross by Mr. Hill:

Re-cross-Q. 105. What kind of labor are you now employed in?

Ans. Working at the Pennsylvania Steel Works; or was up to the time I came down here.

[*Re-cross-examination continued de bene esse without waiving objections.*]

Re-cross-Q. 106. When did you first have knowledge of the apparatus referred to in your 102st redirect question and answer?

Ans. I can't give the year, but I think it was prior to 1877.

Re-cross-Q. 107. You are not exactly certain whether it was or not, are you?

Ans. No, sir.

Examination taken, reduced to writing, and by the witness affirmed and subscribed to before me, this 7th day of February, 1883.

FRED. M. OTT,
Examiner.

ABRAM L. RUPP.

Recess for lunch until 2.30, P. M.

FEBRUARY 7, 1883, 2.30, P. M.

Examination resumed, pursuant to adjournment.

Present, same counsel.

GEORGE C. RUPP, *being produced, sworn, and examined, saith:*

Examined by Mr. Storrow:

My age is twenty seven; residence, Stanford, Illinois; occupation, working on a farm.

Q. 1. What relation are you to Mr. Abraham L. Rupp, who has just testified?

Ans. A nephew.

Q. 2. Were did you live up to the spring of 1871?

Ans. With my grandfather, Rev. George Rupp, on Lake Spring farm, in Lower Allen township, Cumberland county, Penna.

Q. 3. Did your grandfather move, that spring, and where to, and did you go with him?

Ans. He moved to Shiremanstown, and I went with him.

Q. 4. At the time you moved away, that spring, had the ram been put on to the place?

Ans. I do not remember.

Q. 5. Where did you live, and whom did you work with during the season of 1871?

Ans. I lived with my uncle, Abe Rupp, above Shiremanstown, in his new house.

Q. 6. Whom did you live and work with during the season of 1872?

Ans. Mr. Samuel Hertzler.

Q. 7. Whom did you live and work with during the season of 1873?

Ans. Mr. Henry Zimmerman, next to the farm of Mr. George W. Mumper, between Mumper's and White Hill.

Q. 8. In 1874?

Ans. At the same place.

Q. 9. In 1875?

Ans. With my uncle, Harry Neidig, on Lake Spring farm.

Q. 10. In 1876?

Ans. In Vincennes, Knox county, Indiana.

Q. 11. In 1877?

Ans. With my uncle, Abe Rupp, on Lake Spring farm; I lived there nearly four years; I left on the 6th of January, 1881.

Q. 12. Before you went to live with your Uncle Abe in the spring of 1877, had you been at Mr. Drawbaugh's shop, at Eberly's Mills; and if so, please give me some idea of how much?

Ans. I was there some, but not as much as I was after 1877.

Q. 13. Do you remember ever seeing them at work on faucets while the faucet company, or pump company, were there?

Ans. Yes, sir.

Q. 14. If you remember any of the men you saw at work there on faucets, please name them.

Ans. I seen Jacob Carns, John Smith, and Hiram Drawbaugh; I believe that is all; and I seen Dan.

Q. 15. During the first winter that you lived at your uncle Abe's, at Lake Spring farm, which would be the winter of 1877–8, did you have any particular occasion to go to Mr. Drawbaugh's shop; and if so, what was it?

Ans. I did have occasion to go there to sharpen the knives on a new fodder-cutter.

Q. 16. Did you see and hear through a talking-machine at Mr. Drawbaugh's shop at any time during that season when you were there sharpening the fodder-cutter knives?

Ans. I did.

Q. 17. Please state whereabouts in the shop the machine was and how you came to see it and use it.

Ans. It was on the floor at the head of the stairs that go up from the outside, in the large room.

Q. 18. At which end of the room?

Ans. At the far end of the room from the door where I went in.

Q. 19. Was Mr. Drawbaugh doing anything about it when you went in, or how did you come to see it?

Ans. Yes, sir; he was fastening the wire to the ceiling.

Q. 20. Did you listen at it and hear anything through it; and if so, how much did you hear?

Ans. I heard Daniel speak through it, and don't think there was over a dozen words spoken.

Q. 21. Did you see the instrument he spoke into?

Ans. No, sir.

Q. 22. Please look at the instruments now shown you, marked "A," "B," "C," "C reproduced," "D," "E," "F," "G," "H," "I," "J," "K," "L," "M," "N," "O," "P," "Q," and state which of them most resembles the machine that you used, and held in your hand, on this occasion.

Ans. This one, "A," resembles the one I seen most.

Q. 23. Do you remember whether the one you used had the mouthpiece on one side instead of being at the center? What is your recollection on that point?

[*Objected to by Mr. Hill, as leading.*]

Ans. I am not certain, but think it was at the side.

Q. 24. Had you ever seen or heard any talking-machines at Mr. Drawbaugh's shop before that?

[*Same objection*]

Ans. No, sir.

Q. 25. Had you ever before that heard that Mr. Drawbaugh had any talking-machines at his shop?

[*Same objection.*]

Ans. No, sir.

Q. 26. Who used to be your companions among the young men of the neighborhood? Please to name some of them.

Ans. Mr. William Fettrow, Hiram Ditlow, Abe Ditlow, Orlando Kahney, Norman Kahney, and Ira Kahney.

Cross-examined by Mr. Hill:

Cross-Q. 27. When was it that you saw the telephone at Mr. Drawbaugh's shop, and who was present at the time?

Ans. It was the winter of 1877 and 1878; there was no one present but Daniel Drawbaugh.

Cross-Q. 28. Was it before Christmas or after?

Ans. I can't say positively.

Cross-Q. 29. What is your best recollection?

Ans. My best recollection is that my uncle Abe bought a new fodder-cutter in December, 1877, and that we ground the knives at home the first time, and it took so long that I told my uncle Abe I would take them down to Dan's shop and grind them on his emery-stone. I can't say whether I saw the telephone the next time or not, but the first time we ground the knives at home, and after that we took them down there.

Cross Q. 30. Do you think it was along about the first of your grinding them there that you saw the telephone?

Ans. I don't remember.

Cross-Q. 31. When were you last there before your uncle got his feed-cutter?

Ans. I don't remember.

Cross-Q. 32. Can you swear that you had been there in Drawbaugh's shop at any time within five years before your uncle got his feed-cutter?

Ans. No, sir.

Cross-Q. 33. Did you ever see any telephones in Drawbaugh's shop after that occasion which you have testified about?

Ans. No, sir.

Cross-Q. 34. How many telephones did you see there on that occasion?

Ans. One.

Cross-Q. 35. Where was it?

Ans. It was on the south side of the large room, at the head of the steps from the outside.

Cross-Q. 36. In what story of the building?

Ans. In the third story.

Cross-Q. 37. Don't you know that there were never any steps leading up to that story on the south side of the building?

[*Question objected to by Mr. Storrow, as assuming that the witness has said that the steps were on the south side of the building, whereas the testimony is specific to the contrary.*

Mr. Hill replies that if it was at the south side of the large room, and was at the head of the steps, then the steps must have been at the south side.

Mr. Storrow replies that witness said the room was at the head of the stairs, and stated in terms that the telephone was at the south side, opposite to where you enter.]

Ans. Yes, sir.

Cross-Q. 38. When you saw the telephone there, where was the instrument when you first saw it?

Ans. It was at the south side of the large room.

Cross-Q. 39. I understand that; but was it on the floor, or in the air, or on a bench, or in Drawbaugh's hands, or where?

Ans. Mr. Drawbaugh gave the instrument to me.

Cross-Q. 40. Did you see where he got it from?

Ans. No, sir.

Cross-Q. 41. Did you see him attach any wires to it, or were the wires attached to it when you first saw it?

Ans. The wires were attached to it when I first saw it.

Cross-Q. 42. Did you put your head down to it to listen, or put it up to your ear, while he was operating?

Ans. I put it to my ear.

Cross-Q. 43. Did you listen at it there in the large room?

Ans. Yes, sir.

Cross-Q. 44. Where did Drawbaugh do his talking into the instrument he was using?

Ans. In a small office on the left hand side of the door as you go in from the outside.

Cross-Q. 45. Was the grinding of your cutters done in the large room where you saw the telephone?

Ans. I think it was.

Cross-Q. 46. Were you in the small office where he talked into his instrument?

Ans. No, sir.

Cross-Q. 47. I mean were you in there during that day

Ans. No, sir.

Cross-Q. 48. Did you tell your Uncle Abraham Rupp when you got home anything about seeing this talking-machine there.

Ans. I don't remember that I did.

Cross-Q. 49. Did you hear him say anything that winter about seeing a talking-machine at Drawbaugh's shop?

Ans. No, sir.

Cross-Q. 50. Then, so far as you know, neither of you knew that the other had seen it there; is that so?

Ans. Yes, sir; that is so.

Cross-Q. 51. When did you first know that your uncle had seen it and talked through it there?

Ans. I didn't know that he had seen it at all.

Cross-Q. 52. He has just testified that he saw it there that winter; didn't you know it before coming on the stand to testify?

Ans. I don't believe I did.

Cross-Q. 53. From that winter of 1877-8 to the 6th of January, 1881, did you live in his family?

Ans. Yes, sir; in Mr. Rupp's family.

Cross-Q. 54. Have you talked with Mr. John C. Comfort about this case?

Ans. Yes, sir.

Cross-Q. 55. How many times?

Ans. Once before I came here last Monday.

Cross-Q. 56. When did you first talk to Mr. Comfort about it and where?

Ans. I talked to him first about it this winter in the depot at Stanford, Illinois.

Cross-Q. 57. How came you to meet him in the depot at Stanford, Illinois?

Ans. I went to Stanford that morning on some business for the man I lived with; I met Benjamin Kauffman in town and he told me he was going east; that Comfort had come after him, and said that Comfort was in the depot now. I went over to see him to inquire about my relations in Cumberland county.

Cross-Q. 58. Did Comfort have any telephone instruments there with him?

Ans. He did not show me any.

Cross-Q. 59. Did you come on here from Illinois at the request of the complaintants to testify in this case.

Ans. Yes, sir.

Cross-Q. 60. How soon did you see Mr. Comfort after you got here?

Ans. I seen him the same morning I came; I can't just state the exact time. I got here to the hotel I think about eight o'clock or a little before.

Cross-Q. 61. Did he then show you any telephone instruments?

Ans. No, sir.

Cross-Q. 62. Had any one shown you any telephone instruments since you arrived in Philadelphia, before the telephone instruments were shown to you here this afternoon, while you were testifying; at the time that you gave your 22nd answer?

Ans. Yes, sir.

Cross-Q. 63. Who was it, and when?

Ans. Mr. J. J. Storrow; I think it was last evening.

Examination taken, reduced to writing, and by the witness sworn and subscribed before me this 7th day of February, 1883.

FRED. M. OTT,
Examiner.

G. C. RUPP.

HENRY S. RUPP, *being produced, affirmed, and examined, saith:*

Examined by Mr. Storrow:

My age is fifty-six; residence near Shiremanstown, Cumberland county, Penna.; occupation, nurseryman and florist.

Q. 1. I believe you have the largest nursery and most extensive green-house in the county; have you not?

Ans. Yes, sir.

Q. 2. How long have you carried on your business at your present place?

Ans. Eighteen years.

Q. 3. Are you a brother of Mr. Abraham Rupp?

Ans. Yes, sir.

Q. 4. Were you a member of the old Drawbaugh Faucet Company?

Ans. I was.

Q. 5. It has appeared that that concern was first organized as an association, or kind of partnership; was it afterwards turned into a corporation under the laws of the State?

Ans. Yes, sir.

Q. 6. Will you please produce a certificate of stock of that corporation?

Ans. Yes, sir; I produce one made out in my name for twenty shares at par value of $100 each, dated October 1st, 1870. It purports to be organized under the general laws; capital stock, $20,000, with a privilege of increasing it to $50,000. The seal states, "Incorporated 1870, Eberly's Mills, near Harrisburg, Pennsylvania." The title is, "The Drawbaugh Manufacturing Company."

Q. 7. As the affairs of that company are now wound up, will you allow me to put that certificate in evidence in this case?

Ans. Yes, sir.

[*Mr. Storrow puts the certificate in evidence to be marked "Exhibit Stock Certificate, Drawbaugh Mfg. Company."*]

Q. 8. It appears from the billhead of the Drawbaugh Manufacturing Company put in evidence in the deposition of Mr. W. L. Gorgas, defendants' printed record, page 688, that besides manufacturing Drawbaugh's rotary pump and Drawbaugh's self-measuring faucet, that the company were manufacturers of stave-cutters, stave jointers, mill-trams, hydraulic rams, etc.; were those machines which Mr. Drawbaugh had got up?

Ans. Yes, sir; they were machines that he got up, but we didn't manufacture all, I don't think; we didn't manufacture rams; we did manufacture the others.

Q. 9. Then if any rams were made there during the time of the company, they were made by Mr. Drawbaugh for his own account and profit, were they?

Ans. Yes, sir; that is my opinion.

Q. 10. It was intimated in the defendants' cross-interrogatories of Mr. Jacob Carns, complainants' record p. 922, that Mr. Drawbaugh asked the company, or suggested to the company that they should manufacture some other things that he had invented or got up; what is your recollection as to whether he did or not?

Ans. My recollection is that he did.

Q. 11. Mr. Drawbaugh in his deposition, defendants' record, p. 1001, says in substance, that he suggested to the company that they should manufacture a gas-governor that he had got up; what is your recollection about that?

Ans. My recollection is that he did offer it.

Q. 12. I find in the records of the company, and in the minutes of the meeting of January 29, 1869, the following; "Daniel Drawbaugh

"agreed to give his gas-governor, that he is now preparing to secure a "patent for, to the company, for the company's use and benefit, the con- "ditions to be agreed upon hereafter." Does that refer to the matter of the gas-governor already spoken of?

Ans. Yes, sir.

Adjourned until February 8, 1883, at ten, A. M.

FEBRUARY 8, 1883, 10, A. M.

Examination resumed, pursuant to adjournment.

Present, Mr. Hill for respondents, and Mr. Storrow for complainants.

[*Examination of Henry S. Rupp, by Mr. Storrow, continued.*]

Q. 13. Did your company meet and examine the gas-governor referred to in that request?

[*Objected to as irrelevant and immaterial.*]

Ans. Yes, sir.

Q. 14. Was it an accidental meeting, or did the members of the company meet especially for the purpose?

Ans. It was a special meeting called for that purpose.

Q. 15. Where did the members meet and examine this gas-governor? and give some description of the exhibition of it, which was made, or attempted to be made, on that occasion.

[*Objected to by Mr. Hill as immaterial and irrelevant.*]

Ans. They met at the company's shop; Mr. Drawbaugh had everything prepared to manufacture the gas and show the lights, when the members met. The gas was made outside of the building, near the blacksmith shop. The lights were fixed, I think, on the second floor, and pipes were laid to convey the gas to that story—it might, possibly, have been the first. It worked very well for a while, but the seam of one of the retorts opened by being heated, and that ended the exhibit of the gas-governor.

Q. 16. In the minutes of January 29, 1869, already referred to, I find the following: "On motion of William R. Gorgas and D. Draw- "baugh, it was agreed that Henry S. Rupp be authorized to advertise "in the *Patriot and Union*, and *State Guard*, Harrisburg, one insertion "each week for three weeks, that the company do custom work and get "up designs, etc." I infer from that that the company was seeking to

do some work besides the manufacture of rotary pumps and measuring faucets; what is the fact about that?

Ans. The fact is that they were seeking other work.

Q. 17. In the minutes of the meeting of March 26, 1869, I find the following:

"On motion of Henry S. Rupp and Daniel Drawbaugh, it was agreed "that Daniel Drawbaugh shall, as speedily as possible, not to interfere "with other necessary work, get up and make a screw-machine for the "use of the shop and for its benefit." What new project and kind of work for the company did that refer to?

Ans. It referred to getting up a machine for manufacturing screws.

Q. 18. What brought that project before the company, and state what proposals and suggestions Mr. Drawbaugh made about it, so far as you can recollect?

[*Objected to by Mr. Hill as immaterial and irrelevant.*]

Ans. I don't know that I am able to say exactly what brought us to—I think there was a gentleman there from Buffalo, a Mr. Dorsheimer, a relative of Mr. Gorgas, who told us about a manufactory that manufactured screws, stating that it was a paying business. Mr. Drawbaugh said that he could easily invent a machine, or get up a machine, that would manufacture screws; I think it was this that led us to this project of manufacturing screws.

Q. 19. Did the company ever engage in manufacturing screws?

[*Same objection.*]

Ans. Not to my knowledge.

Q. 20. The minutes of the meeting of July 19, 1873, state that the interest, tools, etc., of the company have been sold to Hauck Brothers and Co., of Mechanicsburg, Pennsylvania, for the sum of seven thousand dollars and that the company had gone into liquidation; do you remember the fact that the company sold out to Hauck Brothers?

Ans. Yes, sir; I do.

Q. 21. Had Mr. Drawbaugh to your knowledge and recollection ever asked the company or suggested to the company that they should manufacture or patent talking-machines or speaking telephones?

Ans. No, sir; he had not.

Q. 22. If Mr. Drawbaugh, while the company existed and before it sold out to Haucks and divided its money, had brought to the attention of the company, a talking-machine or telephone by means of which

persons at different places could carry on a conversation with each other along a wire, and had demonstrated to them, by having the members of the company actually carry on conversation with it, that it actually was a practically successful machine, and had represented that in his opinion it would supersede the telegraph and that there was a fortune in it, do you think that the company in your opinion, would or would not have taken some steps at least towards embarking in such a business?

[*Objected to by Mr. Hill as leading, hypothetical, argumentative, incompetent, and calling for the mere opinion of the witness.*]

Ans. If the members of the company could have been convinced that the facts as stated concerning the telephone, were such, the company certainly would have taken hold of it.

Q. 23. It has appeared that the company began its operations at the shop in 1867 and sold out to Hauck Brothers & Co., in July 1873; during those six years did you ever use or see a talking-machine at the shop?

Ans. No, sir.

Q. 24. During those six years did you ever hear or know that Mr. Drawbaugh had a talking-machine at the shop?

Ans. No, sir.

Q. 25. Please give me some idea of how much you were at the shop during those six years.

Ans. I can't tell the number of times; I was there quite frequently; I would think, at least once a month, probably oftener.

Q. 26. Did Mr. Drawbaugh do any work for you along about 1872; and, if so, what was it and what was the occasion for it?

Ans. In 1872 I purchased some gas pipe from him and got him to fit it up and had the loan of his tools. That is about all the work I recollect he done for me; we used the pipe to convey water from the barn to the green-houses; it was the year we built one of the green-houses.

Q. 27. What carpenter built that green-house for you that year?

Ans. Mr. David Landis.

Q. 28. Did you ever talk to Mr. Drawbaugh about getting up a cider-making machine for you?

Ans. I asked him once whether he couldn't invent a machine to grind and press the apples in one operation.

Q. 29. When was that?

Ans. I am not certain; I think it was in 1876; I think so because we had a large crop of apples that year.

Q. 30. You have mentioned one time when you got some iron piping from Mr. Drawbaugh for your green-houses; did you ever get any iron piping from him, or get any piping work done by him for your green-houses at any subsequent time; and, if so, when was it and what was the occasion for it?

Ans. In 1877 I built four green-houses, built seventy feet long and each house eleven feet wide; they were built in a row; there were four water tanks in them, which were arranged so that I can get water in each house for two tanks; I had to have piping to carry water from one tank to another.

Q. 31. Who built those green-houses in 1877?

Ans. Mr. Landis did the carpenter work; he did live in Shiremanstown; he now farms Mrs. Hursch's farm, about two miles and a half from Shiremanstown.

Q. 32. Did Mr. Drawbaugh, at any time, present to you a weather-guage of his own construction?

Ans. Yes, sir; he called it a barometer.

Q. 33. When was it?

Ans. I ain't able to tell what year that was in.

Q. 34. Is this the instrument now before you on the table?

[*Objected to by Mr. Hill as immaterial.*]

Ans. Yes, sir.

Q. 35. This instrument seems to be so arranged that the action of the weather upon some thin wood, or other vegetable fiber, turns the needle or point placed in front of a paper dial about four or five inches in diameter; is that the fact about it?

[*Same objection.*]

Ans. Yes, sir.

[*Instrument marked "Drawbaugh's Weather-guage" for identification. Proposed introduction of the instrument objected to by Mr. Hill, for immateriality and irrelevancy.*]

Q. 36. Do you remember writing some articles on horticulture in the Mechanicsburg paper, while Mr. Thomas was editor of it?

[*Objected to by Mr. Hill, as immaterial and irrelevant.*]

Ans. Yes, sir.

Q. 37. Do you remember whether you received this barometer somewhere near the time when you wrote those articles?

[*Same objection.*]

Ans. He gave me the barometer before I had written those articles.

Q. 38. Look at the number of the *Independent and Journal*, of Mechanicsburg, of January 16, 1873, and tell me whether the article to which your name is attached is the first of those articles?

[*Same objection.*]

Ans. Yes, sir; I think it is the first. The article is entitled, "Life and Growth of Vegetable Plants. Introductory Remarks by Henry S. Rupp." The title seems to indicate that it was the first.

Q. 39. What is your recollection as to how long before that article you received the weather-guage?

[*Same objection.*]

Ans. My recollection is, that it was the year previous to the time when I wrote the articles.

Q. 40. Did Mr. Drawbaugh give the weather-gauge to you merely as a gift of friendship, or did you understand that he had some other motive also; and if so, what?

[*Same objection, and further objected to as calling for mere opinion.*]

Ans. At the time I thought it would be a gift of friendship; I think the idea was to try it—although I am not certain—and if it would prove useful, to recommend it.

Q. 41. Do you remember his ever bringing a machine to your office and exhibiting it to you; and if so, who came with him; and state your recollection as to when it was?

Ans. I recollect, but not very strongly, that he did bring a machine there. Mr. Holsinger, the printer, of Eberly's Mills, was with him.

Q. 42. Tell me your recollection about the construction of that machine.

[*Objected to as immaterial and irrelevant unless the machine was a telephone.*]

Ans. I can recollect very little about the machine; I think he had a bell to it, and it appears to me he had taken it apart there—took it in two parts.

Q. 43. Was it a talking-machine?

Ans. No, sir.

Q. 44. Up to the summer of 1876 had you ever seen a talking-machine at Mr. Drawbaugh's shop?

Ans. No, sir; I never had seen one anywhere.

Q. 45. Up to the summer of 1876 had you ever heard that Mr. Drawbaugh had, at his shop, a talking-machine, or a machine by which persons, at different places, could carry on a conversation along a wire?

Ans. No, sir.

Q. 46. If Mr. Drawbaugh, for several years before the summer of 1876, and before speaking telephones had been heard of elsewhere, or had been mentioned in the papers, had had at his shop a talking-machine by which persons at different places could carry on a conversation with each other along a wire, and had freely communicated knowledge of it to the public; and had demonstrated its successful operation in transmitting conversation from one place to another, by causing fifty or more persons to actually talk or hear through it, would you or would you not, in your opinion, have known of it?

[*Same objection as to question No.* 22.]

Ans. In my opinion, I would have known it.

Q. 47. If, during the time that the Drawbaugh Company, under its various names, existed, Mr. Drawbaugh had had at his shop practically operative talking machines, by which conversation could be carried on between persons at different places along a wire, and had shown to them and allowed a considerable number of persons to talk and hear through them, would you, in your opinion, have known of it?

[*Same objection.*]

Ans. Yes, sir; I think I would have heard of it.

Q. 48. If, during the existence of said company, Mr. Drawbaugh had had at the shop, in a fit condition for actual use, a practically operative speaking telephone, by means of which a conversation could be carried on between persons at different places along a wire, will you tell me, from your knowledge of the relations of the parties, whether, in your opinion, he would have communicated the fact to the company or invited it to take up the subject upon some terms and conditions?

[*Same objection.*]

Ans. I think he would, for the reason that he showed us other machines that he had invented, the time we were running the shop.

Q. 49. Please tell me whether the people in the neighborhood of Eberly's Mills constitute a prosperous, fore-handed, and well-to-do community, or the reverse.

Ans. They constitute a prosperous and enterprising people.

Q. 50. If Mr. Drawbaugh, for a number of years before speaking telephones were heard of elsewhere in the world, had possessed a practically operative and successful talking-machine, by means of which persons at different places could carry on conversation over a wire, and had demonstrated its successful character by causing a considerable number of persons to actually talk and hear conversation through it, and had represented that it would supersede the telegraph, and that there was a fortune in it, and that he was ready to give a half interest or other considerable interest in it to whoever would furnish a few hundred dollars to patent it, and buy materials for making the instruments, would he or would he not, in your opinion, have been able to raise the money in the neighborhood?

[*Same objection as to question* 22.]

Ans. If it could have been shown to the people that such were the facts, as stated, in my opinion he would have had no trouble in getting all the money he would have needed.

Q. 51. Give me some idea of how much you were at Mr. Drawbaugh's shop between the summer of 1873 and the summer of 1876.

Ans. I was not there much during that time.

Q. 52. Where did you first talk through or listen at any kind of a talking-machine?

[*Objected to as immaterial.*]

Ans. I recollect very distinctly that the first one I ever talked through was at Mechanicsburg in Messrs. Hauck's store, in the room where they had the stoves.

Q. 53. What took you into Messrs. Hauck's store on that occasion, and when was it?

[*Same objection.*]

Ans. I went in on several occasions. It is not the place where we deal. I can recollect of only twice that I purchased from them, and one was a grate for a stove, which was in the winter or spring of 1877; and the other occasion was purchasing some tiling or glazed pipes. It was one of those times that I talked through the telephone. The purchase of the pipe was either in September or October of 1877.

Q. 54. What occasion had you to purchase glazed earthenware pipes in September or October, 1877, and what did you do with those pipes that you purchased from Hauck & Co?

[*Same objection.*]

Ans. I had to have large pipe to carry the surplus water from one tank into the other, and thence out of the houses. That is what we used them for; we laid them in the ground. I had intended to lay three-inch gas pipes; I found it would take two or three to carry the water, and I found they would cost considerable. One day I passed Mr. Hauck's store and saw these tile lying piled on the pavement. Mr. Hauck was standing there at the time. I asked him whether the pipes could be cemented together so they would not leak; I asked him the price of the pipe. He told me the price, and I found they were much cheaper than the gas-pipe; that was about all that was said that time. Afterwards I talked again with him and went into the store. He kept the pipe in the cellar; he took me to the cellar to see it; we came up into the store-room and were standing talking; my impression is that this was the time I saw the telephone, though I am not certain. There were two boys talking through it when I saw it; I was looking at them awhile, and one of the boys gave the one to me and said I should try it.

Q. 55. What occasion had you to buy new piping at that time, and which of your green-houses did you put that pipe in?

[*Same objection.*]

Ans. I put it in the four green-houses that I built in 1877.

Q. 56. Please give me your best recollection as to what kind of an instrument the telephone was that they were talking with in Haucks' store, as you have stated, and which you had in your hand while you were there.

[*Same objection.*]

Ans. They were two tin cans with hog's bladder stretched over the one end, and the end of the string fastened in the center of the bladder. One of these tin cans was at each end of a string about the length of the store-room. The one was handed to me, and the other one was held by a boy at the other end of the string. We stretched the string and talked; I also put it up to my ear afterwards and listened. I talked a little while, and then laid the tin can on a shelf, alongside of the stoves, the string lying along on the stoves.

Q. 57. Did the use of this string telephone, at Hauck's store, excite in your mind any recollection of having seen or heard that Mr. Drawbaugh had previously had any kind of a speaking-telephone, or talking-machine, at his shop?

Ans. No, sir.

Recess for lunch, until 2.30, P. M.

FEBRUARY 8, 1883, 2.30, P. M.

Examination resumed, pursuant to adjournment.

Present, same counsel.

Examination of Henry S. Rupp, by Mr. Storrow, continued:

Q. 58. Did the use of this string telephone at Hauck's store produce any distinct impression on your mind at the time as to its novelty? If so, state your recollection about.

[*Objected to by Mr. Hill, as immaterial.*]

Ans. It did make an impression on my mind. I had read about the telephone, and seen pictures of it in the papers. I recollect I was anxious to try one; and seeing an opportunity there in the store, I waited a few minutes to get a hold of the one those boys had in the store. I put one of those tin cans to my ear, and listened to them talking, and heard it plainly.

Q. 59. Did you ever listen at a talking-machine at Drawbaugh's shop; and, if so, was it before or after you used the string telephone at Mr. Hauck's store as you have stated?

Ans. I think I did, although I am not positive; and if I did, it must have been after the time I had that one at Mechanicsburg.

[*The last clause of answer objected to by Mr. Hill, as mere expression of opinion and argumentative.*]

Q. 60. Will you state your recollection as to the business upon which you went to Mr. Drawbaugh's shop at the time when you listened at his telephone?

[*Objected to by Mr. Hill, as assuming that the witness testified that he listened at the telephone, when he distinctly said that he was not positive, but only thought so.*]

Ans. I went to have some pipes fitted for the tanks at the green-houses—to get some pieces to use there.

Q. 61. Which green-houses?

Ans. The four green-houses that were built in 1877; the same houses that I used the tile in.

Q. 62. Did you state to Mr. Smith and Mr. Storrow your recollec-

tion of the telephone that you listened at at Mr. Drawbaugh's shop, before you examined the telephone instruments which have been put into this case, or any copies of them, and before they were described to you; and, if so, you will please state the features of it which you told them as resting in your recollection?

Ans. I did tell them about one I thought I saw there; I told them that my impression was that I was at his shop at one time after I had seen the one at Mechanicsburg. Mr. Drawbaugh showed me one that was either painted green or had plaster-of-paris inside, or both.

Q. 63. Have you any recollection as to whether magnetism or electricity was connected with it or used with it in any way; if so, state what your recollection is on that subject?

Ans. I asked Mr. Drawbaugh what he had the plaster-of paris inside for; he told me it was a non-conductor of heat, and he thought it was also a non-conductor of sound; he also told me that it was rather a rude instrument; that there was a hog-bladder over the end, and that it would do much better if he had parchment over the end, or that he intended to put parchment over it. He also spoke about electricity connected with it; by this I got the impression that he intended to improve the telephone, or bring it into practical use: by "telephone," I mean those little telephones that we consider toys.

Q. 64. Did you see the instrument which he talked into on this occasion?

Ans. I must have seen it, or I wouldn't have got the impression I spoke of above.

[*Answer objected to by Mr. Hill as argumentative.*

Complainant's counsel says that since the objection is made to the answer he requests that it be struck out.

Respondent's counsel says, "No, let the answer and the objection stand."]

Q. 65. Have you any recollection of ever having seen a talking-machine, on any other occasion, at Mr. Drawbaugh's shop?

Ans. No, sir.

Q. 66. How much have you been at Mr. Drawbaugh's shop since 1877?

Ans. I don't think I was there since I got that pipe from him.

Q. 67. How well did you hear and understand what was said through the talking-machines on that occasion at Mr. Drawbaugh's shop? State your recollection on the subject.

Ans. I did not understand it well.

Q. 68. Please look at the instruments now shown you marked "A," "B," "C," "C reproduced," "D," "E," "F," "G," "H," "I," "J," "K," "L," "M," "N," "O," "P," "Q;" I will inform you that the glass-tumbler instrument "F," and the tin-can instrument "B," were coated inside with plaster-of-paris when first produced in this case. State which of these instruments most nearly conforms to your recollection of the instrument you listened at in Mr. Drawbaugh's shop on the occasion you have referred to?

Ans. This one (indicating "B") comes up exactly to my idea, if it had plaster of-paris, for I never saw any of these, (indicating the others,) in his shop.

Q. 69. Did Mr. Drawbaugh ever come to you with a view to obtaining your testimony in this controversy?

Ans. Yes, sir.

Q. 70. Did he come to you or speak to you more than once about it?

Ans. Yes, sir; he spoke to me pretty often about it.

Q. 71. On any of these occasions when he so spoke to you, did he show you some of these instruments, or instruments similar to any of them?

Ans. He did, one time when he was at my place, have some instruments with him similar to these small wooden ones.

Q. 72. Did he, on any of these occasions, show you the tin-can instrument, "B," or the glass-tumbler instrument, "F?"

Ans. No, sir; he didn't show them to me.

Q. 73. Was Squire Henry Bowman, of Camp Hill, along with him on any of these occasions?

Ans. Yes, sir.

Q. 74. Were you ever, on any of these occasions, spoken to by him, or by any one on his behalf, with reference to his financial condition?

Ans. Yes, sir.

Q. 75. Did you ever have any meeting with any one on this subject in consequence of any request on his behalf? If so, where was it, whom did you meet, and who requested it or took you there?

Ans. I went to Harrisburg, to the residence of Mr. William R. Gorgas. Mr. Drawbaugh and Mr. Jacobs, and, I think, one or two more with them, came past my place and stopped; they wanted to know whether I had any knowledge of Mr. Drawbaugh's having been financially pressed, or poor, at any time; I told them that I had no knowl-

edge that he ever had been; I told them that I thought Mr. Drawbaugh got money from the manufacturing company—that he had worked for the company. They asked me whether his earnings did not go for the instalments that he paid into the company; I said I could not tell unless I would look at the company's books. Mr. Gorgas had the books. They arranged to have a meeting at Mr. Gorgas' house, and sent Mr. Shank to tell me to come over to Mr. Gorgas'; I went with Mr. Shank to Mr. Gorgas' house. There was five of us met and looked over the books; we came to the conclusion that he was not very hard pressed, financially, at that period. One item we took into consideration was, that he owned a house in Milltown. Mr. Gorgas, Mr. Hertzler, and I were the members of the company present, and I think Mr. Jacobs and Judge Hill were the other persons, but I am not certain.

[*The statement that certain parties came to a conclusion, et cetera, objected to by Mr. Hill, as incompetent, and, so far as others than the witness are concerned, as mere hearsay. And Mr. Hill, who was present at the examination of the books at Mr. Gorgas' house, states for the consideration of the witness that he, Mr. Hill, has no recollection of any such conclusion being expressed or hinted at on that occasion.*

After the first two lines of the objection had been dictated by Mr. Hill, witness continues.]

I was wrong. There was no conclusion stated there. I meant to say that I was of the opinion.

[*The opinion of the witness objected to as incompetent.*]

Q. 76. Have you looked over the record-book of the company which has been referred to in your testimony; and, if so, please state whether the talking-machine or telephone is there mentioned?

Ans. No, sir; nothing about telephones.

Q. 77. In order that some dates may be fixed, I will ask you to give the date of the meeting at which it was voted to organize as a corporation under the laws?

Ans. It was at the meeting of February 7th, 1870, and the record-book contains on the following page an agreement to form a corporation, dated February 7th, 1870, signed by the following, who were all the members: William R. Gorgas, M. B. Mosser, George Wise, Joseph C. Hursh, A. H. Gardner, William L. Gorgas, John Sheely, Henry S. Rupp, J. F. Hursh, S. M. Hertzler, and Daniel Drawbaugh. The minutes of

the meeting of the former manufacturing company, March 25th, 1870, contain the following:

"On motion of Mr. Gorgas, seconded by Mosser, D. Drawbaugh was "elected master-mechanic and draftsman."

[*Mr. Storrow puts in evidence a copy of the minutes of the Drawbaugh Manufacturing Company of the meetings of January 29 and March 26, 1869, and July 19, 1873, already referred to, to be marked "Exhibit extracts Drawbaugh Manufacturing Company minutes."*]

Q. 78. Has Mr. Samuel Hertzler more than one parlor organ at his house?

Ans. No, sir; he has only one.

Q. 79. When did he get it; state your recollection about it?

[*Objected to by Mr. Hill, as immaterial and Mr. Hill cautions the witness to testify from his own memory and not from hearsay.*]

Ans. He got it in 1875, to the best of my recollection from the evidence that I have.

[*Answer objected to by Mr. Hill, as mere opinion and inference.*]

Q. 80. What means have you of aiding your memory as to the date and what do you refer to as the evidence that you have?

[*Objected to as immaterial, and Mr. Hill says that if the fact is worth proving the complainants should call Mr. Hertzler, who can probably inform the court correctly.*]

Ans. I purchased a new organ in the spring of 1876 and Mr. Hertzler bought one the year before we did.

Q. 81. Did Mr. Hertzler have any organ before that?

Ans. No, sir; not to my knowledge.

Q. 82. Have you been in the habit of visiting Mr. Hertzler for a good many years? I mean, socially, and not merely for the purpose of transacting business?

Ans. Yes, sir.

Adjourned until February 9, 1883, at ten, A. M.

FEBRUARY 9, 1883, 10, A. M.

Examination resumed, pursuant to adjournment.

Present, same counsel.

[*Examination of Henry S. Rupp, by Mr. Storrow, continued.*]

Q. 83. Has Mr. Hertzler's establishment been a place somewhat ex-

tensively resorted to by neighbors and others for a good many years past?

Ans. Yes, sir.

Q. 84. You told me a few minutes ago that in reading over your deposition, this morning, you noticed that you hadn't quite understood one of my questions; will you please state what the question was that you refer to, and what meaning you intended to convey by your answer?

Ans. I was asked the question by Mr. Storrow, "Did you see the instrument that Mr. Drawbaugh spoke into?"—I think it was—I understood him to mean the telephone complete—the two instruments and the string.

Q. 85. I now ask you, therefore, whether you saw, according to your recollection, the particular instrument that Mr. Drawbaugh spoke into on that occasion, in addition to the particular instrument that you listened at?

Ans. I do not know whether I saw that instrument.

Cross-examined by Mr. Hill:

Cross-Q. 86. Did anybody call your attention to the sixty-fourth answer which you have just corrected?

Ans. No, sir; no one called my attention to it; I was reading over the testimony and found that I misunderstood Mr. Storrow. I told him that I was looking over the testimony and found everything was right except one question. He asked me what that was; I told him and he said it could be corrected.

Cross-Q. 87. You have been asked a series of questions in which the summer 1876 is referred to apparently as marking a definite epoch, and said questions have called for your statement in substance as to whether you ever saw or heard of Mr. Drawbaugh's telephone before that summer. (See interrogatories 44, 45, etc.) Is it your understanding that the object of those questions was to establish the theory that Drawbaugh had no telephone before the summer of 1876, but that he derived it after that summer from the knowledge of the Bell telephone, which was exhibited at the Centennial, and became known about that time?

[*Question objected to by Mr. Storrow, as incompetent and immaterial.*]

Ans. It was not my understanding that they wanted to establish that; neither do I think they did; I thought that they wanted to bring out the facts as I knew them.

Cross-Q. 88, Have you stated to complainants' counsel any fact which has not been brought out in your evidence?

Ans. I don't understand that question properly.

Cross-Q. 89. Have you at any time stated to Mr. Storrow or Mr. Smith any fact bearing upon this case which they have not brought out in your examination?

Ans. I don't recollect that I did. I think that I did not.

Cross-Q. 90. Are you certain that you never heard of Mr. Drawbaugh's telephone or talking-machine prior to the summer of 1876?

Ans. As far as memory can be depended on, I am.

Cross-Q. 91. In your 77th answer you named all the members of the Drawbaugh Manufacturing Company; are you certain that you never heard any of those gentleman say anything about Drawbaugh's telephone or talking-machine from the year 1867 down to the year 1872?

[*Objected to by Mr. Storrow, as incompetent.*]

Ans. I have no data or anything to fix a certainty, although circumstances and events transpiring during that time show without a doubt that there was nothing said about the telephone.

Cross-Q. 92. Of those eleven men who constituted the Drawbaugh Manufacturing Company, with what one, if any, were you on the most intimate terms at that time?

Ans. I was not on more intimate terms with one than I was with another.

Cross-Q. 93. Which of them lived nearest to you?

Ans. John Sheely lived nearest.

Cross-Q. 94. Was any of them related to you in any way?

Ans. Yes, sir; three of them: Dr. M. B. Mosser, John F. Hursh, and Joseph Hursh.

Cross-Q. 95. What was their relation to you?

Ans. They were brothers-in-law.

Cross-Q. 96. Are they all living?

Ans. No, sir; Dr. M. B. Mosser is dead.

Cross-Q. 97. When did he die?

Ans. I can't state the exact time—probably not quite two years ago.

Cross-Q. 98. Were you on intimate terms with him up to the time of his death?

Ans. Yes, sir.

Cross-Q. 99. Are you sure that you never heard him say anything about Drawbaugh's talking-machine away back from 1877 to 1872?

[*Objected to by Mr. Storrow as incompetent.*]

Ans. As far as I dare depend upon my memory, I am.

Cross-Q. 100. While the old company was in operation, of which you and these gentlemen were members, were you not impressed with the idea that Mr. Drawbaugh was giving a good deal of his time and attention to some invention which he was making, and which did not relate to the company's operations?

Ans. Yes, sir; he gave a good bit of his time to inventions—more so than we thought he should—but he was always willing and anxious to show us what he was doing and inventing.

Cross-Q. 101. So far as you remember, was he willing and anxious to show his inventions to any one of you more than to the others?

Ans. He let on so to me, that he did. He told me that he always liked to show his inventions to me and explain them; that I always gave more attention to what he said than some of the other ones.

Cross-Q. 102. Then, from your recollection of that fact, do you think he would have shown his talking-machine to you if he showed it to any member of the company?

Ans. Yes, sir; I do think he would, for the reasons above stated, and also for the reason that Mr. Drawbaugh and myself were then, as well as now, on quite intimate terms.

Cross-Q. 103. Was Dr. Mosser a very upright, conscientious, and truthful man, of high standing in the community where he lived?

[*Objected to by Mr. Storrow, as immaterial.*]

Ans. He was.

Cross-Q. 104. Were you familiar with his handwriting?

[*Objected to by Mr. Storrow, as immaterial.*]

Ans. Yes, sir.

Cross-Q. 105. Do you think you would know his signature if you saw it?

[*Same objection.*]

Ans. I think I would.

Cross-Q. 106. I hold in my hand an affidavit purporting to have been made by Dr. Mosser on the 4th day of December, 1880, which reads as follows:

"IN THE UNITED STATES PATENT OFFICE,

"BEFORE THE EXAMINER OF THE CLASS OF ELECTRICITY,

"Before me, a justice of the peace, in and for the county of Cum- "berland, State of Pennsylvania, personally appeared Dr. Martin B. "Mosser, who, being duly affirmed, says: I am a practicing physi- "cian, and reside in Mechanicsburg, Cumberland county. Between the "years of 1867 and 1872, I frequently visited the shop of Daniel Draw- "baugh, at Eberly's Mills. Some time during that period Drawbaugh "told me that he was at work on an instrument for transmitting vocal "speech over a wire, by means of electricity, to a distance, and showed "me an instrument which he had constructed for that purpose. He "called it a talking-machine. I have it now before me and am able, "positively to identify it. This was somewhere between 1869 and "1872. I have known Daniel Drawbaugh for twenty years. I am ac- "quainted with his reputation for veracity and honesty. It is good—I "have never heard it called in question. I have had dealings with him, "myself and have always found him honest and truthful. From all I "have heard about him and from what I have myself seen, I would "place great confidence in what he would say, whether upon oath or "not.

"Affirmed and subscribed before me, this 4th day of December, 1880.
"H. M. BOWMAN,
Justice of the Peace.

M. B. MOSSER, M. D."

Please look at the signature of the original affidavit now shown you and state whether it is or is not Dr. Mosser's handwriting?

[*Complainants' counsel objects to this attempt to force upon the record, as if it were evidence, a paper which purports to be the affidavit of a dead man, and which has never hitherto been produced in the case nor exhibited to the complainants; which does not purport to be sworn to before any officer authorized to take affidavits to be used in the United States Courts. Complainants' counsel, not waiving that objection, further objects, de bene esse, to the contents of it as immaterial and mere heresay, so far as relates to any alleged talking-machine; inasmuch as it is not accompanied by, and does not otherwise point out, the alleged machine purporting to be referred to; inasmuch as it contains only Mr. Drawbaugh's own statements in his own favor concerning his alleged purposes and objects; inasmuch as it does not purport to state that Dr. Mosser ever talked through the machine or attempted so to do, or even believed that it was capable of transmitting speech, and further objects that the testimony called for by the question is not competent to prove the paper.*]

Ans. It looks like his handwriting

Cross-Q. 107. As one familiar with his handwriting would you say that the signature is in his handwriting, in your opinion?

[*Same objection.*]

Ans. Yes, sir; in my opinion it is.

Cross-Q. 108. Are you familiar enough with Mr. Bowman's handwriting to say whether the signature purporting to be his, is his signature?

[*Same objection.*]

Ans. No, sir; I am not.

[*The original affidavit here exhibited to the witness is offered in evidence as "Exhibit Mosser Affidavit." It is as above and is endorsed:—*

"55,"

"*M. B. Mosser.*"

Same objection; and further, that said paper was not in evidence in this cause at the time it purports to have been taken and is not now.]

Cross-Q. 109. Do you think that you were in Drawbaugh's shop as often as once a month from the first of January, 1873, till the time when the company sold out to Hauck Brothers & Co., in July, 1873?

Ans. I am not able to say, but I rather think I was not.

Cross-Q. 110. Is it your understanding that this minute-book of your old company, to which you have referred in your direct evidence, contains minutes of all the official meetings of the company?

Ans. What is meant by official meetings?

Cross-Q. 111. I mean business meetings of the concern holden for the transaction of the business of the company, and not the mere accidental meeting of the members of the company at the shop or elsewhere; and by the company, I mean the business concern under its various forms of organization from its beginning in 1867, to its winding up in 1876. With this understanding, please to answer the question.

Ans. The book will show that; if there was a meeting on the day set when we adjourned any meeting, the records will show that we had that meeting.

Cross-Q. 112. You mean that the book shows all the regular official meetings, do you?

Ans. All that there was business done at concerning the company, of any importance.

Cross-Q. 113. By reference to said minute-book and taking them all in their consecutive order in the book, I find that meetings of the concern were holden on the dates following, to wit:

May 24, 1867.

June 20, 1867.

August 1, 1867.
August 21, 1867.
October 7, 1867.
July 30, 1868.
August 28, 1868.
September 26, 1868.
October 30, 1868.
November 27, 1868.
December 25, 1868.
January 29, 1869.
February —, 1869.
March 26, 1869.
April 30, 1869.
May 29, 1869.
June 25, 1869.
July 30, 1869.
August 27, 1869.
November 26, 1869.
December 8, 1869.
February 7, 1870.
March 18, 1870.
March 25, 1870.
July 18, 1870.
July 25, 1870.
September 28, 1870.
October 22, 1870.
December 5, 1870.
July 19, 1873.
May 1, 1876.

Will you please look over the book and see if I am correct?

Ans. Yes, sir; you are correct.

Cross-Q. 114. The concern was organized into a corporation because it had not been financially successful as a co-partnership; was it not?

Ans. That was not the reason.

Cross-Q. 115. What was the reason?

Ans. I understand that the reason was that we thought we could do business on a safer basis, and if we had been financially successful we would have been just as anxious to have it incorporated.

Cross-Q. 116. Are you as sure that your 114th answer is correct as you are of anything else you have testified to in your examination?

Ans. Yes, sir; I am, so far at least as I am concerned.

Cross-Q. 117. In said minute-book immediately following the minute of the meeting of February 7, 1870, I find recorded the following entry, to wit:

"Whereas the partnership heretofore existing between us has not "been successful, we have mutually agreed one with the other that we "will convert our association into a manufacturing company under the "general laws; that the present partnership property shall be considered "as the basis of the new company at a valuation of ten thousand dollars, "($10,000,) and our respective interests in that valuation are to be ap- "portioned among its present members in proportion to the interest "held in said company and the amounts respectively before paid in by "each individual partner.

"In witness whereof we have hereunto set our hands and seals this "seventh (7) day of February in the year one thousand eight hundred "and seventy, (1870.)

"M. B. Mosser,	Wm. R. Gorgas,
Secretary and Treasurer.	*President pro tem.*
"George Wise,	Henry S. Rupp,
"Joseph C. Hursh,	J. F. Hursh,
"A. H. Gardner,	S. M. Hertzler,
"W. L. Gorgas,	Dan'l Drawbaugh.
"John Sheely."	

Do you remember that agreement, and is that signature "Henry S. Rupp" in your handwriting?

Ans. Yes, sir.

Recess for lunch until 2.30, P. M.

FEBRUARY 9, 1883, 2.30, P. M.

Examination resumed, pursuant to adjournment.

Present, Mr. Storrow and Mr. Smith for complainants, and Mr. Hill and Mr. Jacobs for respondents.

Cross-examination of Henry S. Rupp, by Mr. Hill, continued:

Cross-Q. 118. The minute-book shows that the Drawbaugh Manufacturing Company was first organized by the election of its officers at the meeting of March 25, 1870, does it not?

Ans. Yes, sir; March 25, 1870.

Cross-Q. 119. And that, on that day, William R. Gorgas was elected president; M. B. Mosser, secretary and treasurer; John Kutz, superintendent; and D. Drawbaugh, master-mechanic and draftsman?

Ans. Yes, sir; they were.

Cross-Q. 120. On the same day provision was made for paying a

large amount of indebtedness of the old partnership organization, was there not?

Ans. Yes, sir.

Cross-Q. 121. Was that provision in the shape of an assessment upon the members of the corporation?

Ans. No, sir. We agreed between the members to assume the debt individually.

Cross-Q. 122. Who assumed it?

Ans. Each member of the company assumed a certain portion of it.

Cross-Q. 123. Did the company afterwards settle an account with those members for the portions they assumed?

Ans. No, sir. It was a final settlement and liquidation of the debt of the old company.

Cross-Q. 124. On the 25th of July, 1870, the company decided to borrow a thousand dollars for ninety days, to pay off hands, etc., for the company, did it not?

Ans. Yes, sir; I recollect that.

Cross-Q. 125. On the 28th of September, 1870, the company decided to give their note at sixty days in favor of Brady, Mishey & Co., for $475; and also decided that the valuation of the company's effects be increased to $15,000 instead of $10,000, did it not?

Ans. Yes, sir; it did.

[*Mr. Hill requests the examiner to copy from said minute-book the minutes of all the meetings of the said corporation from and including the time it was organized, March* 25, 1870, *to the time when it was wound up, May* 1, 1876, *the same being eight meetings, holden respectively March* 25, 1870, *July* 18, 1870, *July* 25, 1870, *September* 28, 1870, *October* 22, 1870, *December* 5, 1870, *July* 19, 1873, *May* 1, 1876, *with the meeting of the board of directors recorded immediately after the meeting of October* 22, 1870, *but not dated, and file them in evidence as "Exhibit Drawbaugh Manufacturing Corporation Minutes."*]

Cross-Q. 126. It appears from the minute-book that from December 5, 1870, to July 19, 1873, there was no meeting of the company; and that from July 19, 1873, to May 1, 1876, there was no meeting of the company, the last three meetings being holden respectively December 5, 1870, July 19, 1873, and May 1, 1876; am I not correct?

Ans. Yes, sir; that is correct.

Cross-Q. 127. Now, between the meeting of December 5, 1870, and

the meeting of July 19, 1873, do you think you were at Drawbaugh's shop as often as once a month?

Ans. I must look over the records of the book before I can answer that; no, sir; I was not, in 1873.

Cross-Q. 128. At a meeting of the board of directors, which he entered without date in the book between the minute of the meeting of October 22, 1876, and the minute of the meeting of December 5, 1870, it was moved to countermand the orders for castings, and suspend operations in the same until further orders. The business of the company began to come to a halt about that time; did it not?

Ans. Yes, sir; it about came to the conclusion to stop manufacturing faucets and try to get work from other parties—custom work.

Cross-Q. 129. Do you think you were at Drawbaugh's shop as often as once a month in the year 1872, during which there was no meeting of the company or board?

Ans. I think I was, not on account of the company's business, but on account of business with Mr. Drawbaugh on my own account.

Cross-Q. 130. What business?

Ans. I purchased some pipe from Mr. Drawbaugh that year to carry water from my barn to my new green-house. I went to the shop frequently to have the pipe cut and fitted or threads cut on, or to get tools from Mr. Drawbaugh to put the pipe together at home.

Cross-Q. 131. Do you think you were at Mr. Drawbaugh's shop as often as once a month in the year 1871, in which year there was no meeting of the company or its board, and in which year you were not putting up your green-houses?

Ans. I think I was not.

Cross-Q. 132. Do you think you were at Mr. Drawbaugh's shop as often as once a month in the year 1870?

Ans. I am inclined to think I was there a dozen times during the year, although I am not certain about that.

Cross-Q. 133. The meeting of July 19, 1873, was held at Mr. Gorgas' house, and the meeting of May 1, 1876, was held at Dr. Mosser's house, at Mechanicsburg; were they not?

Ans. They were held at the places mentioned.

Cross-Q. 134. Were you at Drawbaugh's shop at about the time when the property was sold to the Haucks'?

Ans. I cannot recollect whether I was. The Haucks and Mr Eberly came to my house and wanted to know certain things concerning the

machinery, and so forth, and also to ascertain at what figures it could be purchased; we talked several hours about it; I could not tell when the contract was closed nor who done it.

Cross-Q. 135. From the time when you bought some gas-pipe from Drawbaugh, and got him to fit it up, and got the loan of his tools in 1872, as stated in your 26th answer, to the time when you built your four green-houses in 1877, and went to have some pipes fitted for their tanks, as stated in your 60th answer, have you any distinct recollection of ever being at Drawbaugh's shop at any time?

Ans. I have no distinct recollection of being there at all during that time, although I think I was there at least once; but I am not certain.

Cross-Q. 136. Have you ever been there since the visit which you made when you were fitting the pipes for the green-houses in 1877?

Ans. I think I was not; it is possible, though, that I was there several times during 1877.

Cross-Q. 137. At the time that Drawbaugh showed you the green telephone, in what part of the shop was it that you saw it?

Ans. I think it was on the same floor that our office used to be, though I am not certain.

Cross-Q. 138. Was that on the second floor above the basement?

Ans. Yes, sir; the floor above the floor where the machinery was.

Cross-Q. 139. In what room was it that you saw the telephone?

Ans. I think it was in the large room, at least part of it.

Cross-Q. 140. Are you certain of that?

Ans. No, sir; I am not.

Cross-Q. 141. Have you any recollection as to what part of the room it was in, if it was the large room?

Ans. It appears in my mind as though it had been on the western side of the room.

Cross-Q. 142. Have you any recollection as to where Drawbaugh was when he was talking into the telephone and you listening at it?

Ans. I could not tell the spot where he stood at the time.

Cross-Q. 143. Do you remember whether he was in the same room with you or another room at the time?

Ans. I do not remember that; I did not look at the telephone long, or say much about it. He was more interested in some clocks than he was in the telephone,—which clocks he had in the office and showed to me. I think he talked over an hour, or perhaps two hours, about those clocks.

Cross-Q. 144. Was the talk about the clocks before or after the talk about the telephones?

Ans. It was after we had looked at the telephone. My business was on the lower floor—having the piping cut to the proper length—and I wanted to see his clocks, as I had heard of them. It was for this purpose that we went up-stairs.

Cross-Q. 145. Describe the clocks which you saw there.

Ans. I don't know as there was one of them finished. He had a wire run from the ground to the clock, although it was not attached to the clock at the time. He had another clock—or a pendulum; there were no works in it—standing on a shelf. Our conversation was at the time that if this clock could be run by a magnet it would be a valuable clock; that if the attraction of the magnet could be cut off at the proper time, or at a particular position of the pendulum, it would be a more valuable clock than the one run by electricity; I think he said that it could not be done; and I said that it would be worth while to try it.

Cross-Q. 146. How many magnetic, or electric clocks, did you see there at that time?

Ans. My attention was directed only to two, including that pendulum as one.

Cross-Q. 147. Now, referring to the other clock, and not the pendulum apparatus, how large was it?

Ans. I am not able to describe the dimensions of the clock exactly, nor the works, for the reason that the clock was not running at the time. Mr. Drawbaugh got to describing that the works of the clock had a magnetic apparatus connected with it; I am not able to tell the size.

Cross-Q. 148. Did that clock have a case, or not?

Ans. I ain't certain that it had a case; if it had, it was open in front.

Cross-Q. 149. You don't remember anything about a case?

Ans. No, sir; I do not.

Cross-Q. 150. Where was that clock?

Ans. It was in the room where we used to have our office.

Cross-Q. 151. At what point in that room?

Ans. It was standing on the right-hand side as you went in the door, either on a table or a shelf, or fastened to the partition. My impression is, that this was about the time he was putting up that clock.

Cross-Q. 152. Did he say anything about how long he had been experimenting with electric or magnetic clocks at that time?

Ans. No, sir; he did not.

Cross-Q. 153. Have you any recollection of seeing any electric or magnetic clock in his shop before the time when the Haucks' bought your old company out?

Ans. I have not.

Cross-Q. 154. At the time you saw the clocks there, as you have testified, did you get the impression that they were quite a recent thing with Drawbaugh?

[*Question objected to as entirely incompetent and not calling for testimony, in view of what the witness has already said in his 152d answer.*

Mr. Hill says he gets his authority for asking about impressions from the direct examination of this witness.]

Ans. Yes, sir; I thought it was an invention of his of quite a recent date.

Cross-Q. 155. It was then quite recently that you had heard of his having invented an electric or magnetic clock, was it not?

[*Same objection and question further objected to as assuming.*]

Ans. I might have heard of it for six months prior to that time; I did not see it; I couldn't tell the time exactly when I heard of it, but everybody knew it; there was talk about it in the neighborhood, but I didn't just get to the shop to see it.

Cross-Q. 156. Who first told you of Drawbaugh's electric or magnetic clock?

Ans. It is impossible for me to say who the first one was who told me.

Cross-Q. 157. Did you ever hear of or see an electric or magnetic clock before you heard of Drawbaugh's, and saw it?

Ans. I think not.

Cross-Q. 158. Did you ever know of Mr. Shapley's having an electric or magnetic clock in his jewelry store at Mechanicsburg?

Ans. No, sir.

Cross-Q. 159. When you saw the electric or magnetic clock in Drawbaugh's shop have you any recollection of seeing any other clocks or clock cases there except what you have mentioned?

Ans. I have a faint recollection that there was a clock, or a part of a clock, lying on the table.

Cross-Q. 160. Mr. M. W. Jacobs was with Drawbaugh when he visited you first to see what you knew about his telephone; was he not?

Ans. I cannot say that he was. The first time Mr. Drawbaugh was

there I was in my office writing. A carriage drove past the office, and I did not take notice who was in. When the carriage was past the office they stopped, and Mr. Drawbaugh came in to see me.

Cross-Q. 161. State the conversation between yourself and Mr. Drawbaugh at that time, so far as you remember it.

Ans. He spoke about the telephone, but I cannot remember what he said.

Cross-Q. 162. State what you said to him, so far as you remember it.

Ans. I cannot remember anything. He was only in a few minutes and then went out.

Cross-Q. 163. Didn't he ask you whether you had ever seen his telephone at a very early time many years before?

Ans. It was for the purpose of ascertaining something about this that he stopped, but I cannot recollect what was said.

Cross-Q. 164. Didn't you tell him, in substance, that you had lingering in your mind a faint impression of seeing a talking-machine at his shop a great many years before, but could not fix the time nor circumstances, nor remember much about it?

Ans. No, sir; I did not tell him that.

Cross-Q. 165. Did you tell him anything like it?

Ans. If I did say anything at all about it, I said I did not see it at that time.

Cross-Q. 166. By "at that time" do you mean the time Drawbaugh came to see you about it?

Ans. Yes, sir; the time he was in my office.

Cross-Q. 167. At that time you had forgotten everything about seeing it, and you subsequently recalled the thing to your mind; is that what you mean?

Ans. No, sir; not exactly. I can explain myself: Some time afterwards Drawbaugh came to my place with some wooden instruments having holes to speak in. He asked me whether I ever saw them. I said I never had seen them. This will prove that at the former meeting I did not say I had a faint recollection.

Cross-Q. 168. Did he ever come to your place with a green tin-box telephone lined with plaster-of-Paris, or with a glass tumbler instrument lined with plaster-of-Paris?

Ans. No, sir; he was only at my place once with instruments belonging to a telephone, and these were wooden instruments.

Cross-Q. 169. Was Mr. Jocobs with him then?

Ans. I cannot tell; there were one or two with him in a carriage; they drove to the office; I, being in the house, Mr. Drawbaugh came back to the house; the carriage was standing at the office; I could not see who was in it from the house.

Cross-Q. 170. Was Mr. Jacobs present at any later interview between you and Mr. Drawbaugh, at your place, relating to the telephone?

Ans. He was.

Cross-Q. 171. Didn't you tell him that you had a very faint impression on your mind of having seen Mr. Drawbaugh's telephone at a very early period, a great many years ago; but could not fix the time, or words to that effect?

Ans. No, sir; I did not; but told him I did not see it.

Cross-Q. 172. When and how did you recall to your mind the fact that you had at one time seen his telephone?

Ans. I recalled it to my mind but a very short time ago. Mr. Storrow came to my house about a week ago. He inquired about some pipes that I used in my green-houses. When thinking over the pipe I used in the green-houses, I found I had used some earthen pipe. I studied where I had got it, and found I had purchased it from the Messrs. Hauck, of Mechanicsburg. In thinking of the place where I purchased it, it came to my mind that I saw a telephone at the place. I suppose the reason I remembered this was because it was the first one I saw and spoke through. There wasn't much said that evening about it. Mr. Storrow left my place, and the following Saturday evening I received a notice to come to Philadelphia, as a witness in this case, on the following Monday. This appeared very short notice. I did not know much about it. I got to thinking over it. In fact, I was thinking of it all the time nearly, and particularly whether I saw one in Mr. Drawbaugh's shop. At all times, when I was thinking of Mr. Drawbaugh's, these wooden instruments appeared before me, which I knew I had never seen there. In connection with the piping, and the fixing of it in Mr. Drawbaugh's shop, I thought of those clocks I spoke of awhile ago; and at the same time it appeared to me that I saw a green instrument that I listened to at his shop. I knew the ones I saw at Mechanicsburg were not painted green. On thinking further, it came to my mind that there had been plaster-of-Paris inside. I hardly thought it worth while to say anything at all about this, as I thought he had only wooden instruments. When I arrived here I, for all, told Mr. Storrow that it appears to me that I saw an instrument in Mr. Drawbaugh's shop painted green, or with

plaster-of-Paris inside. I hadn't the least idea that this would be put in evidence when I said it, because I didn't think he had such an instrument at this time. Mr. Storrow said we would come down to the room and see the instruments; they were lying on the table. Among them was an instrument precisely like the one I saw at Mr. Drawbaugh's shop; only after examining it I found it had no plaster of Paris inside. I said to Mr. Storrow that if this had plaster of Paris inside I thought it would be the very instrument I saw at the shop. Mr. Storrow asked me farther what Mr. Drawbaugh said at the time he showed me the instrument. At that very moment it came into my mind that I asked Mr. Drawbaugh why he had plaster of Paris inside, and he said that he thought plaster of Paris was a non-conductor of heat, and he thought it was also a non conductor of sound. I also remembered that he intended to apply electricity to improve the telephone or telegraph, I don't know which.

Cross-Q. 173. Did you tell Mr. Storrow about seeing the clocks there at the same time that you saw the telephone?

Ans. No, sir; there was nothing said about the clocks.

Cross Q. 174. Did you ever see a dial or a key telegraph at Mr. Drawbaugh's shop, having a hand to move around on the dial, or having keys something like piano-keys, with letters of the alphabet arranged upon them?

Ans. I do not recollect of seeing anything like that.

Cross-Q. 175. Which member of the old Drawbaugh Manufacturing Company lived nearest to Mr. Drawbaugh's shop?

Ans. Mr. Drawbaugh.

Cross-Q. 176. Which one lived the next nearest?

Ans. Mr. Hertzler.

Cross-Q. 177. You have testified that Mr. Hertzler's establishment has been a place somewhat extensively resorted to by neighbors and others for a good many years past. Mr. Hertzler keeps wines and liquors in the cellar of his dwelling-house, but no bar or counter; and does not sell by the glass; is not that the fact?

Ans. Yes, sir.

Cross-Q. 178. He does not keep what is commonly known as a drinking place; does he?

Ans. No, sir; the wines and liquors that are purchased from him are not drank on the place.

Redirect by Mr. Storrow:

Q. Q. 179. Mr. Hertzler is quite liberal in *giving* samples to be consumed on the premises to his neighbors and callers, and to those who do purchase there; is he not?

Ans. Yes, sir; he gives them a taste of what they have purchased, after the purchase. He is a manufacturer of wines and liquors.

Q. Q. 180. [*de bene esse.*] Is the body of the affidavit referred to in your 107th cross-interrogatory in the same hand-writing as the signature of Dr. Mosser?

Ans. No, sir.

[*Respondent's counsel states that the body of the affidavit is in the hand-writing of M. W. Jacobs, Esq., one of respondent's counsel.*]

Q. Q. 181. (*De bene.*) Dr. Mosser also kept a drug store in Mechanicsburg; did he not, during the latter years of his life?

Ans. Yes, sir.

Q. Q. 182. (*De bene.*) What was the condition of his health for six months before he died, or longer?

Ans. His health was very poor for six months before he died.

Q. Q. 183. (*De bene.*) What did he die of?

Ans. Consumption.

Q. Q. 184. (*De bene.*) Was he or was he not one of those members of your company who desired that it should go into some new business besides the faucets, if it could find any?

Ans. He was one who desired to go into new business.

Q. Q. 185. I find in the records of the meeting of your corporation of March 25, 1870, the following statement:

"It had been found necessary to assess each share $500, in liquida-
"tion of the debt now upon the company."

And in the record of the same meeting I find the following:

"It was also further agreed that an assessment of $30 in cash be
"made upon each member's full share, (being nine,) the same being in
"liquidation of interest on said loans, (certain outstanding debts of the
"company for borrowed money being referred to in the preceding para-
"graph,) this to be paid to the treasurer on or before the 1st of April,
"1870."

In the deposition of Mr. William L. Gorgas, page 679, defendant's record, I find it stated that on April 1, 1870, assessments were laid on each full member of $500 and $30; is that according to your recollection?

Ans. Yes, sir.

Q. Q. 186. I find in the minutes of the meeting of September 28 1870, the following:

"It was also resolved—the motion of H. S. Rupp, and seconded by "Hertzler—that before the issue of stock certificates the valuation, at "present, of the company's effects, instead of $10,000, be increased to "$15,000."

Is that according to your recollection?

Ans. Yes, sir.

Q. Q. 187. I find in the minutes of the meeting of December 5, 1870, the following:

"Assessment on stock was then considered, and after some agitation "and argument of the same, it was agreed, on motion of Daniel Draw- "baugh, and seconded by A. H. Gardner, that in view of raising a "working fund an assessment of ten dollars be made on each share of "stock issued, payable on the 20th of December, 1870, without fail."

I understand from the certificate which you have produced that 20 shares of the stock of the corporation represented what was called the share of one full member, so that the assessment of $10 per share meant $200 for each full member, as stated in Mr. Gorgas' deposition, respondents' record, page 679; is that your recollection of the matter?

Ans. Yes, sir.

Q. Q. 188. In the minutes of the meeting of February 7, 1870, at which it was agreed to organize a corporation, the vote therefore was made on your motion; is that according to your recollection of the fact?

Ans. Yes, sir.

Q. Q. 189. I find in the minutes of the meeting of July 25, 1870, that a thousand dollars was to be raised in bank in order to pay off the hands on a note to be drawn by the treasurer with yourself as indorser. Did you and Dr. Mosser put your names to that note and raise the money on it?

Ans. Yes, sir; we did.

Recross by Mr. Hill:

Recross Q. 190. In the deposition of William L. Gorgas referred to in the redirect examination I find it stated in substance that the corporation was owing Mr. Drawbaugh quite a large amount in 1870 for labor done by him, and that in the settlement his assessments and installments

along about that time were charged up against his claim; is that your recollection?

Ans. Yes, sir; I recollect that.

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me this 9th day of February, 1883.

FRED. M. OTT,
Examiner.

HENRY S. RUPP.

Adjourned until Monday, Feb. 12, 1883, at ten, A. M.

FEBRUARY 12, 1883, 2 30, P. M.

Examination resumed by consent.

Present, Mr. Smith, for complainants, and Mr. Hill, for respondents.

SAMUEL F. HAUCK, *being produced, sworn, and examined, saith:*

Examined by Mr. Smith:

My age is thirty-two; residence, Mechanicsburg, Cumberland county, Pennsylvania; occupation, hardware merchant, and also manufacturer of fly-nets.

Q. 1. Where did you reside in the years 1872 to 1876, and in what business were you engaged during those years; and who, if anyone, was associated with you in that business?

Ans. I resided in Mechanicsburg; I was engaged in two separate businesses at that time; one was with my brother G. W. Hauck, trading under the name of Hauck & Co.; that was the tin and stove business. The other was the manufacture of molasses faucets: G. W. Hauck, D. A. Hauck, J. A. Eberly, and myself, trading under the name of Hauck Brothers & Co.

Q. 2. When did the firm of Hauck Brothers & Co. engage in the faucet business, and from whom did you purchase the property used in that business?

Ans. In July, 1873; from the Drawbaugh Manufacturing Company.

Q. 3. Did that purchase include the patent on faucets invented by Daniel Drawbaugh?

Ans. Yes, sir.

Q. 4. How long have you been interested in the fly-net business, and is that business carried on under a patent?

Ans. I went in that business in the fall of 1881. It is carried on under J. F. Huston's patent.

Q. 5. Did you take part personally in the purchase of the property of the Drawbaugh Manufacturing Company? If so, state what you did in connection with the purchase of that property.

Ans. I did; D. A. Hauck, G. W. Hauck, and myself went over and examined the tools, to see which belonged to the Drawbaugh Manufacturing Company and which belonged to Mr. Daniel Drawbaugh; we were shown by him—Mr. Drawbaugh; Dr. Mosser was along at the time.

Q. 6. Had you known Mr. Drawbaugh before that time?

Ans. No, sir.

Q. 7. How much time was spent in examining the property before the purchase, and how carefully were the things in the shop looked at for the purpose of ascertaining their ownership?

Ans. I suppose we spent several hours there the first time; and we were there twice examining them; we had Mr. D. A. Hauck examine the lathes carefully to see what he thought they would be worth.

Q. 8. Did your examination extend to all parts of the building, including the basement and attic?

Ans. Yes, sir; it did.

Q. 9. You stated that you made the examination to ascertain what property belonged to the company and what to Mr. Drawbaugh; do you remember what part of the property belonged to him—what kind of property it was?

Ans. Through the lower room were some small tools he claimed, and in the upper room—the room in which he worked—principally all belonged to him.

Q. 10. After you made the purchase, what part did you personally take in carrying on business?

Ans. I worked some little in the shop, done some of the hauling of faucets away from the shop, and traveled part of the time selling faucets.

Q. 11. During what part of the time was it that you worked in the shop, and was your work only during one period, or at different times?

Ans. In August, 1873; I worked there four days at one time; then I never worked there more than a day, or a half day at intervals—not often at that—in 1873 and 1874.

Q. 12. How often did you have occasion to go the shop for faucets, and during what time principally?

Ans. I used to get there sometimes once a week, and sometimes maybe once in two weeks; during the latter part of 1873 and the spring and fall of 1874, I had occasion to go there most for faucets.

Q. 13. While you had your business there, what were your relations personally to Mr. Drawbaugh, and how much did you see of him?

Ans. We were always on the best of terms. I did not always see him, but I think most of the times.

Q. 14. Do you remember that there was an interference in the Patent Office, in 1879, between David A. Hauck and Daniel Drawbaugh, in which you were examined as a witness for Mr. Hauck?

Ans. Yes, sir; I do.

Q. 15. Do you remember who cross-examined you on behalf of Mr. Drawbaugh?

Ans. Mr. Jacobs, of Harrisburg.

Q. 16. Referring to a printed copy of your deposition in that case, which I have, I find this question and answer recorded as a part of the cross-examination:

"*Cross-question* 19. You and David A. Hauck frequently went to "Drawbaugh's shop and talked with him on the subject of machinery, "and of his invention, did you not?

"*Answer* 19. We were frequently there together, but did not go "there together frequently, and talked to Drawbaugh about machinery, "and his inventions."

Would you make the same answer now to Mr. Jacobs' question which you made then?

[*Objected to by Mr. Hill, as irrelevant, Mr. Jacobs' question evidently relating to the faucet invention connected with the subject of that interference, and the witness' attention having been in no wise called thereby to the subject of this suit.*]

Ans. Yes, sir.

Q. 17. Mr. Jacobs proceeded as follows:

"*Cross-question* 20. He was very free and accommodating in giving "ideas and hints on those subjects to friends who asked him?"

and you answered:

"*Answer* 20. Yes, sir; he was."

Is your recollection the same now that it was then, as to Mr. Drawbaugh's relations to friends?

[*Objected to as irrelevant, Mr. Jacobs' question relating solely to Drawbaugh's readiness to aid friends who asked him for aid, in the way of hints or suggestions in getting up machinery or inventions of their own.*]

Ans. Yes, sir; it is.

Q. 18. The next question and answer are as follows:

"*Cross-question* 21. And David A. Hauck and the members of your "firm were always on friendly terms with him up to the time of this "controversy?

"*Answer* 21. So far as I know they were."

Does this question and answer state correctly the relations of the members of your firm to Mr. Drawbaugh during the period inquired of, so far as you knew them?

Ans. Yes, sir.

Q. 19. Were you during the time you were there an inventor, having occasion to go to Mr. Drawbaugh for hints and ideas concerning your own inventions?

Ans. I was never an inventor; D. A. Hauck and I asked him at one time if he couldn't get us up a cheaper faucet, with a round chamber. And at one time I talked to him about making a pair of seaming-tongs for tin roofing; I explained to him a pair that were in use, and how they were constructed, and he thought he could get something up to do the same work, for less money.

[*Question and answer objected to by Mr. Hill as incompetent so far as they have any bearing upon the question of the faucet invention, that matter having been settled by the decision in the interference, and being entirely a collateral matter, and immaterial to the purposes of the controversy in this case.*]

Q. 20. In your answer to Mr. Jacobs' 19th cross-interrogatory, quoted above, you say you talked to Drawbaugh about machinery and his inventions; state whether or not you talked to him about other inventions of his than that of the faucet, which was the subject of the interference; and if so, whether such conversations were or were not of frequent occurrence.

[*Objected to as leading.*]

Ans. We often talked about different things he had, and he showed us things that he had made.

Q. 21. What things of his invention do you remember that he talked to you about, or that he showed you?

Ans. He had a stamp-canceller, or stamp-cutter, a weather-guage, a carpet-rag knotter, a wire-insulator; and he had a telegraph-machine there with a magnet that worked on a pivot, an electric-clock, a fire-alarm; and he had a patent ram; he had a nail-machine there in the cellar, that he showed us; that is about all, I think.

Q. 22. Did you understand that that there was a patent on his invention on the ram?

Ans. He claimed an improvement on it.

Q. 23. You understood that it contained some improvement of his invention, and you spoke of it as a patent ram; what I want to know is, whether you understood that a patent had been actually granted, or whether it was merely something that he had invented.

[*Objected to by Mr. Hill as immaterial.*]

Ans. I understood that it was an improvement on the regular ram, that he had made.

Q. 24. Did Mr. Drawbaugh ever talk with you about becoming interested in any of his inventions; if so, what one was it, and when did the talk take place?

Ans. Either in the fall of 1876, or early in the winter of 1877, he asked me how I would like to go into the electric clock. He said Mr. Shapley was going in it, and he would like to get up a company.

Q. 25. Did you see the clock about that time at Mr. Shapley's place?

Ans. I seen an electric clock at Mr. Shapley's, but do not know if Dan made it or not.

Q. 26. Did he say anything to you about having taken steps to introduce the clock, or about having prospects of having it introduced; if so, what did he say?

[*Objected to as immaterial, irrelevant, and not rebutting.*]

Ans. He told me he had talked to some of the Pennsylvania railroad men at Harrisburg, and if it proved satisfactory they would put it in use.

Q. 27. State whether or not Mr. Drawbaugh at any time said anything to you about telephones or talking-machines, or whether or not you saw any such machines at any time at his shop?

Ans. He did not, and I never seen any at his place.

Q. 28. State whether or not, in view of the fact of your friendly relations during the time that you carried on business at his shop, and of the freedom of his communication to you with reference to his inventions, you would, in your judgment, have known the fact if he had had in his shop practical speaking telephones capable of being used, which he freely showed to other people, and which were exposed to observation in his shop?

[*Objected to as leading, assuming, hypothetical, argumentative, calling for the mere opinion of the witness, and incompetent.*]

Ans. I think I would.

Q. 29. The sworn answer in this case contains this statement in reference to telephones or talking-machines made by Daniel Drawbaugh: "That some of the original machines and instruments, invented, "made, used, and exhibited to many others long prior to the said alleged "inventions of said Bell, or either of them, are still in existence, and "capable of successful practical use; and are identified by a large num- "ber of persons who personally tested and used and knew of their prac- "tical operation and use in the years 1870, 1871, 1872, 1873, and 1874, "and both subsequently and prior thereto."

State whether or not, in your judgment, if such machines had been in existence in Drawbaugh's shop during the years that you were there; and had been personally tested and used by a large number of persons, who knew of their practical operation and use, you would also have known of their existence, and of their practical operation and use?

[*Same objection.*]

Ans. I would have.

Q. 30. The sworn answer also contains this further allegation:

"That said Drawbaugh's original invention was complete, successful, "operative, and practically and successfully operated on many occasions, "in the presence and hearing of many other persons; and knowledge "thereof was freely communicated to the public by said Drawbaugh."

State whether or not, in your judgment, you would have known the fact, if, while you were visiting Mr. Drawbaugh's shop, he had had a speaking telephone which was practically and successfully operated on many occasions in the presence and hearing of many other persons; and knowledge thereof had been freely communicated to the public?

[*Same objections.*]

Ans. I would have.

Q. 31. Will you look at the several instruments now produced and laid on the table by the examiner, marked respectively "A," "B," "C," "C reproduced," "D," "E," "F," "G," "H," "I," "J," "K," "L," "M," "N," "O," "P," "Q," and state whether you ever saw them, or either of them, at Mr. Drawbaugh's shop?

Ans. No, sir; I never seen any of those.

Q. 32. Of whom did you hire the shop while you carried on business there, and what rent did you pay?

Ans. From Mr. Heck, for one hundred dollars a year.

Q. 33. Did that include any machinery beyond the water-power?

Ans. No, sir.

Q. 34. Will you look at the diagram on page 921, of Mr. Drawbaugh's deposition, and state whether that represents the rooms in the second story as they were when you first went there, and before the axle company commenced business; and, if not, in what respect they were different.

Ans. It does not; the partition running east and west ran the whole width of the building, and there was only one partition running north and south. I was there, too, when the building was in that shape (indicating diagram on page 923, defendant's printed record.)

Q. 35. Before the axle company commenced how did you enter the second story—by a stairway within the building, or outside of it?

Ans. By a stairway within the building.

Q. 36. Did you have free access to the room in the north-east corner of the second story; and were you, or not, frequently in it?

[*Objected to as leading.*]

Ans. I did have, and was in it often.

Q. 37. State whether or not you, and the men who worked for you, had occasion to visit the attic; and if so, through what rooms they went to get to it.

Ans. We did have, and had to pass through that north-east-corner room to get on to the attic; that was the only stairway leading to the attic.

Q. 38. State how early you had any knowledge of the string-telephone, so-called.

Ans. In the summer of 1877.

Q. 39. Were they made at your place; if so, in what way were the first ones made?

Ans. They were; we used fruit-cans with the ends cut off, and a piece of parchment, or bladder, tied over the end.

Q. 40. Were they ever lined with plaster-of-Paris, or painted green outside?

Ans. They were not, to my recollection.

Q. 41. Have you had any business-dealings with Mr. Daniel Drawbaugh within the last two or three years; and if so, to what extent?

[*Objected to as immaterial and irrelevant.*]

Ans. We put a tin roof on his house in Mechanicsburg, in August, 1881; I sold him a cook-stove in October, 1881; the roof amounted to something like one hundred dollars, and the stove was twenty-eight dollars.

Cross-examined by Mr. Hill:

Cross-Q. 42. Referring to your examinations of the property at or prior to your purchase from the Drawbaugh Manufacturing Company in July, 1873, tell us everything that you remember seeing at that time on the second floor of the shop; I mean on the floor next below the attic.

Ans. That weather-guage was there then, and the magnet that worked on a pivot; there was a great many of Dan's tools there—a wood-turning lathe, a pair of machine-shears for cutting tin, a machine for punching strainers; there was a bench there then, with a foot-tread clamp to it, for soldering strainers. There was one soldering-iron, and a sheet-iron firing-pot. There was a walnut box half full of molasses, with a faucet in the box; a couple of chalk-crayon and water-color pictures hanging on the wall; there was either a six or eight-cornered electric clock in that room; there was an old English clock in another room; a lot of daguerrotype fixtures and a few pictures. In that room there was a lot of books and papers; I didn't examine them at that time; and I seen the stamp-canceller, or cutter, at that time; that is about all that I can think of.

Cross-Q. 43. Referring to the things mentioned in your last answer, enumerate all of them that were sold by the Drawbaugh Manufacturing Company to your firm.

Ans. Turning-lathe, shears, machines for punching strainers, the bench and foot-clamp for soldering strainers, the fire-pot and soldering-iron, the box and faucet with molasses in, and some of the small tools that Dan was using; and a small drill-press that was also up-stairs; and there were shafting and pulleys and hangers there in one room.

Adjourned until February 13, 1883, at ten, A. M.

FEBRUARY 13, 1883, 10, A. M.

Examination resumed, pursuant to adjournment.

Present, Mr. Storrow for complainants, and Mr. Hill for respondents.

Cross-examination of Samuel F. Hauck, by Mr. Hill, continued:

Cross-Q. 44. You stated in your direct examination that you saw Mr. Drawbaugh's shop when the second floor was arranged, as shown in the diagram on page 923 of respondents' printed record; when did you see it so arranged?

Ans. It was either, I think, in the fall of 1878 or spring of 1879.

Cross-Q. 45. How many times were you at Mr. Drawbaugh's shop

between the 1st of January, 1876, and the 1st of October, 1880, and when?

Ans. Not very often, and I couldn't say exactly when.

Cross-Q. 46. Have you any definite recollection of being there at all in the year 1876?

Ans. No, sir.

Cross-Q. 47. Have you any definite recollection of being there at all in the year 1877?

Ans. No, sir.

Cross-Q. 48. Have you any definite recollection of being there at all in the year 1878?

Ans. I think I was there in the fall of 1878, or spring of 1879, with Mr. D. A. Hauck.

Cross-Q. 49. Was it after Mr. D. A. Hauck filed his application for a patent on his faucet?

Ans. I think it was; I couldn't be positive, though.

Cross-Q. 50. Have you ever been there since that interference was decided?

Ans. Not that I remember.

Cross-Q. 51. Then your last visits were probably in the year 1879; assuming it to be so, how many times were you there in the year 1879?

Ans. Twice, I think.

Cross-Q. 52. With Mr. D. A. Hauck both times?

Ans. No, sir.

Cross-Q. 53. How came you to go there on those two occasions, and who were with you on each, if anybody?

Ans. D. A. Hauck and myself were going to Harrisburg, and we drove in there to see if we could see anything of the faucet he was working on; that was the first time. The next time I went for a chuck—I think for the large lathe—and I had a lady friend with me.

Cross-Q. 54. Who wanted the chuck for the large lathe?

Ans. I am not certain, but I think it was for Mr. Plank; I won't say positively, though, whether it was for the large lathe or not.

Cross-Q. 55. Were you on the second floor of the shop on both of those visits?

Ans. Yes, sir.

Cross-Q. 56. How long were you there at each of those visits?

Ans. At the first visit we may have been there an hour or more; at the last one only a little while.

Cross-Q. 57. Do you remember seeing any speaking-telephones there on either of those visits?

Ans. Not that I remember of.

Cross-Q. 58. Have you any distinct recollection of being at Mr. Drawbaugh's shop in the year 1875; if so, state when, and the circumstances that caused you to go there?

Ans. Some time in 1875; D. A. Hauck and I were there for faucets.

Cross-Q. 59. Was that the last time that you and D. A. Hauck were there together for faucets?

Ans. I think so.

Cross-Q. 60. Did you drive down there together in a wagon or carriage?

Ans. I could not say positively, but I think we did.

Cross-Q. 61. On that occasion, were you on the second floor of the shop?

Ans. Yes, sir.

Cross-Q. 62. Did you see and talk with Mr. Drawbaugh?

Ans. I do not remember.

Cross-Q. 63. Did you ever do any work there in 1874, except to call and get faucets?

Ans. I made a few strainers, I think, in 1874.

Cross-Q. 64. But you are not certain about its being in 1874, if I understand you?

Ans. No, sir; I wouldn't be positive.

Cross-Q. 65. When you were working there on the different days on which you worked at the shop while your firm was carrying on business there, what work did you do, and in what part of the shop did you do it?

Ans. In 1873 I chipped the gates off the chambers and put dials on faucets in the lower room, and I made strainers in the upper room.

Cross-Q. 66. In 1873 and 1874 you were traveling most of the time, and did not get down to the shop often—am I not right?

Ans. I did not travel as much in 1873 as in 1874, and was not away from home much over a week at any time.

Cross-Q. 67. Does my last question state the facts correctly or not?

Ans. Not exactly.

Cross-Q. 68. Could you not swear to that statement truthfully—I mean the statement contained in that question?

Ans. I couldn't swear that I was traveling most of the time, for I don't think I was; I know I wasn't; I done most of the traveling.

Cross-Q. 69. Could you swear to the last part of the question truthfully, to wit, that you didn't get down to the shop often in 1873 and 1874?

Ans. I got there more in 1873 than I did in 1874, I think.

[*Answer objected to by Mr. Hill, as not directly responsive, and question repeated.*

Question objected to by Mr. Storrow, as indefinite and ambiguous.]

(Witness continues.) I thought I had answered that; I can only answer the way I did, that I got there oftener in 1873 than I did in 1874; I couldn't swear how often I did, as I never kept account of the number of times.

Cross-Q. 70. I want a direct answer to my question, which I again repeat.

[*Same objection.*]

Ans. I could only answer it by saying that I did not get there as often in 1874 as I did in 1873; because I done more traveling in 1874.

Cross-Q. 71. Then I will modify the question a little, and will put it as follows: Did you get down to the shop often in 1873?

Ans. I think oftener that year than in any other.

Cross-Q. 72. You are perfectly able to answer my question directly, and I repeat it, and call for a direct answer.

[*Question objected to as before; and further, upon the ground that language which is so comparatively vague under the circumstances of the examination has been already sufficiently answered.*]

Ans. I don't know how often; but oftener than I did any other year, I think.

[*Answer still objected to by Mr. Hill as not responsive*]

Cross-Q. 73. Can you not truthfully testify that you did not get down there often in 1873?

[*Complainants' counsel objects that, if the question is to be repeated, the examining counsel should indicate more definitely what he intends the witness to understand by the word "often." Respondents' counsel replies that witness knows the meaning of the word and is expected to answer the question accordingly.*]

Ans. No, sir; I cannot. It would depend altogether on what you

would call often. I may have been there on an average of once a week, or once in two weeks in 1873.

Cross-Q. 74. Would you say that you were there often in 1873, if you were there only once in two weeks, using the word "often" with your understanding of its meaning?

Ans. I would; but I may not have been there that often.

Cross-Q. 75. Was your recollection of the facts as clear and full in May, 1879, when you gave your deposition in the faucet interference, as it is now, nearly four years later?

Ans. I should think so.

Cross-Q. 76. I call your attention to your cross-answer 16 in your deposition in said interference case, which answer was as follows:

"Answer 16. I think we bought out the machine in 1873, and in '73 "and '74 I was traveling most of the time and didn't get down there "often; in '75 they wanted me to go out again and I told them there "was no use unless they made their discount larger, and they said they "couldn't unless they could manufacture this faucet cheaper or get up "a cheaper one."

By the words "didn't get down there often," you meant didn't get down to the shop at Eberly's mills often; did you not?

[*Question objected to for the reason that interrogatory* 16 *should also be incorporated into the present question in order that it may appear what the context was, and the point to which the witness' attention was then directed.*

Respondent's counsel requests the examiner to certify upon the record what cross-interrogatory 16 *was, and the examiner certifies that it was as follows:* "*Cross-question* 16. *How do you fix this year?*"]

Ans. Yes, sir.

Cross-Q. 77. With your understanding of the meaning of the word "often," as applied to such a matter as this, I should judge that when you gave that deposition in the interference case, your idea or recollection was, that you were not down at the shop as often as once in two weeks during the time referred to; do you think I am correct in my supposition?

Ans. I could answer that by a little explanation; we bought the factory in July, 1873, and I did no traveling until November, 1873; from July, 1873, to November, 1873, I got there more times than after that.

Cross-Q. 78. From your previous answers in this case I judge that you would not now undertake to swear that you were down there as often as once every two weeks, from July, 1873, to November, 1873; am I correct?

Ans. On an average, I think I was, or oftener, in that time.

Cross-Q. 79. Can you swear that you were there at all in the month of October, 1873?

Ans. I could not be positive, but I think I was.

Cross-Q. 80. Answer the same question as to the month of September, 1873.

Ans. I think I was.

Cross-Q. 81. But you are not positive about it, if I understand you.

Ans. I couldn't fix any exact day I was there, unless I had some of my books; then probably I could.

Cross Q. 82. I understand you that you were there several times in the month of August, 1873; am I correct?

Ans. Yes, sir.

Cross-Q. 83. At what time in November, 1873, did you begin to travel for the firm?

Ans. I could only tell that from the time I made sales.

Cross-Q. 84. Is it your recollection that it was early in November when you began traveling?

Ans. I do not remember, but think it was.

Cross-Q. 85. In your examination-in-chief in this case you spoke of having some talk with Drawbaugh at one time about going into the electric-clock business, in which he mentioned Mr. Shapley's intentions; when and where was that conversation?

Ans. At Mr. Drawbaugh's shop late in 1876, or early in 1877; I don't remember which.

Cross-Q. 86. How happened you to be there at that time, and who was with you, if any one?

Ans. I had a lady friend with me—a relative of mine—and I went there for a part to a lathe that S. & G. Hauck were using.

Cross-Q. 87. Was that the trip with a lady friend that you have before mentioned in your testimony, or was it another?

Ans. It was another.

Cross-Q. 88. Did your lady friend go along into the shop, or did she remain in the carriage while you went in?

Ans. She didn't go along to the shop; she remained with an uncle of hers while I went to the shop.

Cross-Q. 89. Did you get the part of a lathe that you went for?

Ans. Yes, sir; I think I did.

Cross-Q. 90. Where was that lathe—on the first or second floor?

Ans. I suppose you mean the part of a lathe. The lathe was in Mechanicsburg; the part that I got was on the first floor, I think.

Cross-Q. 91. Did you go on the second floor during that visit?

Ans. Yes, sir.

Cross-Q. 92. What occasion had you to go on that second floor?

Ans. Dan was up there, and I went up to see him to get it from him.

Cross-Q. 93. Did you find him up there?

Ans. Yes, sir.

Cross-Q. 94. Did you at once tell him what you had come for?

Ans. I think I did.

Cross-Q. 95. Did he and you then go down on to the first floor and get the part of a lathe that you wanted?

Ans. To the best of my recollection, I think I waited there in his room on him.

Cross-Q. 96. What part of the lathe was it that you went to get?

Ans. I think it was a wheel used on the end of the lathe for screw-cutting.

Cross-Q. 97. When you went down stairs, you didn't go up again, I suppose?

Ans. I didn't go down in the lower room that I remember.

Cross-Q. 98. He went down and got what you wanted?

Ans. Yes, sir.

Cross-Q. 99. Did your conversation about the clocks take place on the upper floor?

Ans. Yes, sir.

Cross-Q. 100. In what rooms on that upper floor were you during that visit?

Ans. I think only in the room that Dan worked in—the room, I think, in the north-west corner, towards Eberly's mills.

Cross-Q. 101. What did you find Dan doing when you went in there?

Ans. I think he was working on some wood patterns of some kind.

Cross-Q. 102. Was anybody else working on that floor besides him?

Ans. Not that I remember of.

Cross-Q. 103. From the fact that you were not on the lower floor, I suppose you went up by the outside stairway; did you not?

Ans. That is the way I think I went up.

Cross-Q. 104. Did he show you any electric clocks at that time?

Ans. No, sir; not that I remember of.

Cross-Q. 105. Do you remember seeing any, at that time, in the room where he was at work?

Ans. No, sir; not that I remember of.

Cross-Q. 106. In answer 42 you mentioned seeing a six or eight-cornered electric clock in Drawbaugh's shop about July, 1873, when you examined the machinery with reference to purchasing from the Draw baugh Manufacturing Company; are you sure that you saw a six or eight-cornered electric clock there at that time?

Ans. I feel sure; yes, sir.

Cross-Q. 107. How large was it?

Ans. I should think about twelve to fifteen inches in diameter.

Cross-Q. 108. Mr. Drawbaugh, who is present this morning, tells me that that was a circular clock; think carefully, and see if he is not correct.

Ans. It might have been

Cross-Q. 109. Did you see any other electric clock, or parts of an electric clock, in that shop at that time?

Ans. Not at that time that I remember of.

Cross-Q. 110. Do you remember whether that clock was run by another clock, or by wires leading into the ground?

Ans. It was run by an old English clock in another room.

Cross-Q. 111. It had an electrical connection with the old English clock; had it not?

Ans. I think it had.

Cross-Q. 112. How large was the old English clock?

Ans. I think six and a half or seven feet high, judging from the appearance of it; I couldn't tell exactly.

Cross-Q. 113. Did both clocks have cases?

Ans. Yes, sir; I think they had.

Cross-Q. 114. Was the case of the English clock open in front so that you could see the works or the pendulum?

Ans. I think the top was lifted off, and the works were exposed.

Cross-Q. 115. It was a pendulum clock; was it not?

Ans. Yes, sir; I think it was.

Cross-Q. 116. Did those clocks remain there afterwards, and if so, how long, so far as you remember?

Ans. I think the electric clock was taken away, but don't remember when.

Cross-Q. 117. Do you think it was taken away while your firm were carrying on business there?

Ans. Yes, sir; I would not be positive.

Cross-Q. 118. In what rooms were the two clocks in July, 1873?

Ans. The electric clock was in the large south room; the old English clock was in the north-east corner room.

Cross-Q. 119. Give us the exact location of the electric clock in the large south room.

Ans. It was near the center of the east side of the building, hanging on the wall.

Cross-Q. 120. In your examination-in-chief you spoke of first seeing string-telephones in 1877; didn't you know that they were in common use among the boys in this country prior to 1872, and that the invention had been known to the world for a period more than twice as long as your lifetime?

[*Question objected to as assuming something which does not appear in the evidence, and which the complainant's counsel believes to be an error. Respondent's counsel states that he has a very positive recollection, which, in his mind, amounts almost to a certainty, that in the year* 1869, *while taking testimony in the interference of Loud against Cole, on steam-boat wheels, at the office of Edward F. Brown, Esq., on F street, between Sixth and Seventh streets, Washington, D C., he saw a couple of boys operating a string-telephone on the side-walk in front of Mr. Brown's open door, and that the matter was the subject of conversation for a few minates between Mr. Brown, Mr. Cole, Mr. Coombs, and himself; and that the practice of the invention by the boys around on the streets had been known by respondents' counsel for some little time before that—probably a few months—as respondents' counsel recollects that the fact was not new to his mind, and that he had seen the practice before.*

He well remembers that the instruments which the boys operated in front of Mr. Brown's office, consisted of two small tin cans, about the size of an ordinary mustard-box, with a membrane stretched over their proximate ends, and a tight string extending from the center of one membrane to the center of the other.

Respondents' counsel makes this statement at the request of complainants' counsel.]

Ans. I did not.

Recess for lunch until 2.30, P. M.

FEBRUARY 13, 1883, 2.30, P. M.

Examination resumed, pursuant to adjournment.

Present, Mr. Smith and Mr. Storrow for complainants, and Mr. Hill for respondents.

[*Cross-examination of Samuel F. Hauck, by Mr. Hill, continued.*]

Cross-Q. 121. When you traveled selling faucets did you retail them to the public, or did you sell them to the dealers?

Ans. I sold them to dealers.

Cross-Q. 122. What dealer did you first sell to?

Ans. I think T. & A. Pickering, in Cincinnati, were the first party I sold to.

Cross-Q. 123. About what time did you make that sale?

Ans. I think it was in November, 1873; I am not certain, though.

Cross-Q. 124. Name any other dealers that you sold to within the first two months of your traveling for the firm.

Ans. I sold to Keene & Haggerty, in Baltimore; and I can't remember any other names. Those are large parties—the only reason I remember those; I remember also Shields & Brother, in Philadelphia.

Cross-Q. 125. Before you went to examine the machinery at Drawbaugh's shop, about July, 1873, had you ever heard anything about Drawbaugh's having invented, or having at his shop, a magnetic or electric-clock?

Ans. I don't remember; I might have heard of it.

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me, this 13th day of February, 1883.

FRED. M. OTT,
Examiner.

S. F. HAUCK.

JOSEPH WERT, *being produced, sworn, and examined, saith:*

Examined by Mr. Storrow:

My age is forty-four; residence, Carlisle; occupation, clerking.

Q. 1. Before you began your present occupation at Carlisle, Pennsylvania, what was your occupation, and where did you live?

Ans. I was working for the Western Union Telegraph Company; I lived at Harrisburg.

Q. 2. How long did you work for the Western Union Telegraph

Company at Harrisburg, and what was the nature of your occupation there?

Ans. I worked about nine years as line man, generally repair man and battery man.

Q. 3. Did you have anything to do with telephones in Harrisburg; and if so, state the general nature of your work in connection with them for the Western Union, or for Mr. H. A. Clute, manager?

Ans. I put up wires for Mr. Clute—put up out-door lines and instruments.

Q. 4. Do you remember anything of Mr. Daniel Drawbaugh coming to the Western Union office and borrowing a telephone instrument; and if so, state your recollection about it?

Ans. I remember of Mr. Drawbaugh being there and looking at a telephone; and when he went away he asked Mr. Clute to give him the loan of the telephone.

Q. 5. What kind of a telephone was it?

Ans. It was a "crown" telephone.

Q. 6. Like this one now on the table?

Ans. It was one of that kind of telephones.

[*Mr. Storrows puts instrument in evidence, to be marked "Phelps' Crown Telephone."*]

Q. 7. Did he take it away with him?

Ans. Yes, sir.

Q. 8. If there was any conversation between you and Mr. Clute afterwards about Mr. Drawbaugh's having it, please state what it was?

[*Conversation between Mr. Clute and the witness objected to as hearsay, immaterial, and incompetent.*]

Ans. Mr. Clute asked me several times whether he had fetched it back.

Q. 9. Was this loan soon after the "crown" instruments were introduced in Harrisburg, or long after?

Ans. It was soon after we got them.

Q. 10. Was Mr. Richard B. Ziegler employed in the Western Union office while you were there?

Ans. Yes, sir.

Q. 11. Mr. Ziegler has testified, on page 1029 of complainants' printed record, that Mr. Drawbaugh brought to the Western Union office and showed to Mr. Ziegler, and left there, a certain telephone in-

strument, which he identified. Did you ever see a telephone instrument there which you were told was a telephone of Mr. Drawbaugh's; and if so, state who showed it to you?

Ans. Mr. Ziegler showed it to me at the office.

Q. 12. Look at the exhibits, which the examiner will now show you, and state which of them appears to be or resembles the instrument which Mr. Ziegler showed you as a Drawbaugh telephone at the Western Union office.

Ans. That one, (indicating "A.")

Q. 13. Can you state when it was that Mr. Ziegler showed you this instrument at the Western Union office; if so, please state it?

Ans. I couldn't give the exact date.

Q. 14. If you recollect the year in which it was, please state that.

Ans. No, sir; I couldn't say what year it was.

Cross-examined by Mr. Hill:

Cross-Q. 15. In whose employ are you now?

Ans. Mr. Thudium.

Cross-Q. 16. What is his business?

Ans. Hotel keeper.

Cross-Q. 17. How long were you employed by the Western Union Company at Harrisburg?

Ans. Nine years at Harrisburg.

Cross-Q. 18. From what time to what time?

Ans. From the 1st of October, 1872, till the 1st of May, 1881, I think it was.

Cross-Q. 19. Did you ever see an instrument known as the string telephone, consisting of two boxes with membranes stretched over their ends, and a string stretched from the membrane of one box to the membrane of the other?

Ans. I seen a telphone of that kind made with two segar-boxes.

Cross-Q. 20. When did you first see it?

Ans. I can't give the date exactly; it was from a segar store right alongside of the Western Union office, to a lager beer saloon kept by a Mr. Heiner; it was after Mr. Clute got telephones that they put that up.

Cross-Q. 21. Are you sure that you remember Mr. Drawbaugh's borrowing that telephone and receiving it at the Western Union office and taking it away?

Ans. Yes, sir.

Cross-Q. 22. Now, didn't Mr. Clute take it away himself, and carry it to Mr. Drawbaugh, at Eberly's Mills?

Ans. No, sir.

Cross-Q. 23. Who was present when Mr. Drawbaugh got it?

Ans. I was present, and I suppose the other operators. It was in the back part of the office; he had been looking at the telephone; Mr. Clute had him out in the office showing him the telephone.

Cross-Q. 24. Do you remember Mr. Drawbaugh saying that he wanted to compare its working with that of his own telephone?

Ans. No, sir.

Cross-Q. 25. Was that before, or after Mr. Drawbaugh had his telephone there?

Ans. I couldn't say that; I don't remember whether it was before or after.

Cross-Q. 26. How many times do you remember seeing Mr. Drawbaugh there at the Western Union office talking about telephones?

Ans. Twice that I remember seeing him.

Cross-Q. 27. Once was when he borrowed the telephone; was it?

Ans. Yes, sir.

Cross-Q. 28. When was the other time?

Ans. When him and Mr. Chellis were there.

Cross-Q. 29. When was that?

Ans. I couldn't give the date; Mr. Chellis was in looking at the telephone.

Cross-Q. 30. Was that a long time after the time you saw Mr. Drawbaugh there alone?

Ans. I couldn't just say how long.

Cross-Q. 31. Do you think it was a year or two after?

Ans. Indeed, I couldn't say how long.

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me, this 13th day of February, 1883.

FRED. M. OTT,
Examiner.

JOSEPH WERT.

Adjourned until February 14, 1883, at ten, A. M.

SAMUEL F. HAUCK, *being recalled for further cross-examination, at the request of the respondents, saith:*

Cross-examined by Mr. Hill:

Cross-Q. 1. You are the same Samuel F. Hauck who testified here on February 12th, 1883, are you not? (Complainants' record, page . . . . .)

Ans. Yes, sir.

Cross-Q. 2. In the 27th answer of that deposition you stated that Mr. Drawbaugh never said anything to you about telephones or talking-machines, and that you never saw any at his place; did you not?

Ans. I did.

Cross-Q. 3. In the 31st answer of said deposition you stated that you had never seen any of the instruments mentioned in the interrogatory to which that was an answer; did you not?

Ans. I did.

Cross-Q. 4. Please look again at the machines "A," "B," "D," and "E," in evidence in this case, and state if you do not recollect ever seeing them, or any of them, prior to the institution of this suit.

Ans. No, sir; not that I remember of.

Cross-Q. 5. Do you know David A. Uhrich?

Ans. Yes, sir.

Cross-Q. 6. Where does he live?

Ans. About three and a half miles south-west of Mechanicsburg, in the direction of Dillsburg.

Cross-Q. 7. Do you know Jacob Kimmel?

Ans. Yes, sir.

Cross-Q. 8. Where does he live?

Ans. In Mechanicsburg.

Cross-Q. 9. Do you remember going to Daniel Drawbaugh's shop at one time in company with David A. Uhrich?

Ans. Not that I remember of.

Cross-Q. 10. Do you remember of seeing Mr. Jacob Kimmel at Mr. Daniel Drawbaugh's shop at any time?

Ans. Yes, sir.

Cross-Q. 11. Did you ever see him there more than once?

Ans. Only once that I remember of.

Cross-Q. 12. Do you remember whether David A. Uhrich was present on that occasion at said shop?

Ans. Not that I remember of.

Cross-Q. 13. I have information from Mr. Uhrich and Mr. Kimmel that on one occasion you went with Mr. Uhrich to Mr. Drawbaugh's shop at Eberly's Mills, and that then and there you met Mr. Kimmel and Mr. Drawbaugh and that Mr. Drawbaugh then showed all three of you some of his electric speaking telephones, including these four machines "A," "B," "D," & "E," now on the table—have you any recollection of the circumstance?

[*Question objected to as improper.*]

Ans. I have not.

Cross-Q. 14. Have you any recollection of ever seeing or being shown any telephones at Mr. Drawbaugh's shop in the presence of Mr. Uhrich and Mr. Kimmel?

Ans. I have not.

Cross-Q. 15. Would you say that such an interview and such an exhibition of the telephones to you as I have stated, did not actually take place, or only that you have no recollection about it?

Ans. To the best of my knowledge I don't think it ever took place.

Cross-Q. 16. Are you as certain of that as you are of anything else you have testified to in this case?

Ans. I feel sure of it.

Cross-Q. 17. Do you feel as sure of it as you do of anything else you have testified to in this case?

[*Question objected to as frivolous.*]

Ans. I do.

Examination taken, reduced to writing and by the witness subscribed to, before me the 16th day of February, 1883, he having been sworn upon his previous examination.

FRED. M. OTT,
Examiner.

S. F. HAUCK.

Adjourned until February 17, 1883, at ten, A. M.

FEBRUARY 17, 1883, 10, A. M.

Examination resumed, pursuant to adjournment.

Present, Mr. Storrow for complainants, and Mr. Hill and Mr. Jacobs for respondents.

SAMUEL F. HAUCK, *being recalled, saith:*

Examined by Mr. Storrow:

Q. 1. (*De bene.*) You were asked yesterday concerning an alleged visit to Mr. Drawbaugh's shop when you met Mr. Kimmel. I have information from Mr. Kimmel that he was present once at Mr. Drawbaugh's shop with Mr. Uhrich and saw some telephones; and that he was once present there with Mr. David McIlheny and did not see any telephones; if you were present on either of those occasions will you state which one?

[*Objected to as improper.*]

Ans. I was there when Mr. Kimmel and Mr. McIlheny were there.

Q. 2. (*De bene.*) State whether on that occasion Mr. Drawbaugh exhibited any instrument said to be of his own construction and which employed electricity; and if so, what was it?

Ans. He showed us the fire-alarm at that time.

Q. 3. (*De bene.*) I now refer you to your deposition in the faucet interfererence case, already in evidence in this case which you gave in May or June of 1879; and I refer you particularly to the cross-interrogatories and answers 26 to 31 inclusive, in which you state that in or about January, 1879, you and David Hauck went to Mr. Drawbaugh's shop and saw Mr. Kimmel there; and that you thought David McIlheny was with him, and to cross-interrogatory 33 in which you stated that Mr. McIlheny and Mr. Kimmel drove down the Eberly's mills that day in a sleigh: was that the occasion upon which you saw the fire-alarm as you have just stated?

Ans. It was.

Q. 4. (*De bene*) On day before yesterday—Thursday of this week—defendants' counsel requested me to have you attend for further cross-examination, and I telegraphed you to come down at once; do you remember receiving that telegram?

Ans. Yes, sir.

Q. 5. (*De bene.*) Did you have any conversation with Mr. Kimmel on that day with reference to Mr. Drawbaugh's telephones, and if so, will you state what it was?

[*The introduction of a conversation with Mr. Kimmel, at this stage of the case, objected to as improper and incompetent, and mere hearsay.*]

Ans. I went to the factory on Thursday morning to have some nets altered; I saw Mr. Kimmel there; he asked me when I got home; I

told him last night; I asked him if he had seen any telephones there; he said he had never been to the shop until after Dan moved to Mechanicsburg, and he thought that was in 1876. I then asked him if he remembered of D. A. Hauck and I being there when he and Mr. McIlheny were there. He said he did, and that was the time that Dan showed us the fire-alarm. He did not remember of any telephones then, as the electric clock was the most talked about.

Q. 6. (*De bene.*) Was this conversation with Mr. Kimmel, day before yesterday morning, before you received the telegram requesting you to come down here, or after you received it?

[*Same objection.*]

Ans. The conversation was about ten o'clock; I did not receive the dispatch until 1.30.

Cross-examined by Mr. Hill:

Cross-Q. 7. (*De bene.*) Have you given all of the conversation with Mr. Kimmel on Thursday, so far as it related to the matters here in controversy?

Ans. Yes, sir; I think so.

Cross-Q. 8. (*De bene.*) Have you given his words, or only your recollection of the substance of the conversation?

Ans. I have given his words, as near as I can remember.

Cross-Q. 9. (*De bene.*) Where was that conversation?

Ans. In the lower room of my net factory, at Mechanicsburg.

Cross-Q. 10. (*De bene.*) Did you never meet Mr. Kimmel, at Mr. Drawbaugh's shop, on any other occasion except that occasion when you, David A. Hauck, and Mr. McIlheny were there in 1879?

Ans. Not that I remember of.

Cross-Q. 11. (*De bene.*) You have stated that when you, Mr. Kimmel, Mr. Hauck, and Mr. McIlheny were at Mr. Drawbaugh's shop, in 1879, Mr. Drawbaugh showed you the fire-alarm; are you sure about that?

Ans. I feel sure; yes, sir.

Cross-Q. 12. (*De bene.*) Where was the fire-alarm?

Ans. I think the stove was in the south-east room or the south room, and he placed it on the stove to show it to us.

Cross-Q. 13. (*De bene.*) Did it ring a bell?

Ans. I think it did.

Cross-Q. 14. (*De bene.*) Where was the bell?

Ans. I did not see the bell.

Cross-Q. 15. (*De bene.*) Where did the sound come from?

Ans. From one of the north rooms.

Cross-Q. 16. (*De bene.*) How did the connecting wires run—were they free, or fastened up to the partition or ceiling?

Ans. I think they were loose until they reached the partition.

Cross-Q. 17. (*De bene.*) In what direction did they run from the stove to the partition?

Ans. North-east, I think, or in a north-easterly direction.

Cross-Q. 18. (*De bene.*) Did they run from the stove up to the top of the partition?

Ans. I don't remember, but don't think they did; I couldn't say, but I don't think they run within two or three feet of the ceiling; I won't be positve about it at all.

Cross-Q. 19. (*De bene.*) Did you see them attach the bell to the wires, or was it already attached?

Ans. He did not attach them while I was there, that I saw.

Cross-Q. 20. Did you see him attach the instrument that was used at the stove to the wires, or was it already attached?

Ans. I did not see him attach that wire, as I was not in the room all the time.

Cross-Q. 21. In the faucet invention which was in interference, you were pecuniarily interested, were you not?

Ans. I would have been interested in the manufacture of them.

Cross-Q. 22. Did you, George W. Hauck, and John A. Eberly furnish the money for carrying on that interference on Hauck's side?

Ans. I think Hauck Brothers & Co's. money was used.

Cross-Q. 23. You were one of the firm, were you?

Ans. I was.

Cross-Q. 24. Did David A. Hauck put any capital into that firm, or only his time and labor?

Ans. He put in capital.

Cross-Q. 25. How much and when?

Ans. I think two thousand dollars, some time after we bought the factory; I couldn't tell when without having the books.

Examination taken, reduced to writing, and by the witness subscribed to, before me, this 17th day of February, 1883, he having been sworn when first called.

FRED. M. OTT,
Examiner.

S. F. HAUCK.

FEBRUARY 14, 1883, 10, A. M.

Examination resumed, pursuant to adjournment.

Present, same counsel.

HENRY KINTZ, *being produced, sworn, and examined, saith:*

Examined by Mr. Smith:

My age is forty-seven; residence, New Cumberland, Cumberland county, Pennsylvania; that is my post address; I live in York county, but near New Cumberland. I am a lime-burner.

Q. 1. Do you know a Mr. Eli Hake; and if so, state whether or not you have ever been in his employment?

Ans. I have.

Q. 2. When were you in his employment, and what was your business?

Ans. From the spring of 1870 to the spring of 1876. My business was burning lime.

Q. 3. Where was the lime-kiln situated—on what road, and how far from Eberly's Mills?

Ans. It was situated on the road leading from New Cumberland to Miller's mill. It was fully two miles from Eberly's Mills; I took this by the way the road went. It might be a little nearer by a straight cut.

Q. 4. Did Mr. Eli Hake own the lime-kiln?

Ans. Yes, sir.

Q. 5. State whether or not, during those years, there was anybody else in that vicinity by the name of Hake, who had a lime-kiln or made lime.

Ans. No, sir.

Q. 6. Since you left there, has any other man by the name of Hake carried on the business of making lime there; and if so, who was it?

Ans. Andrew Hake, a brother of Eli.

Q. 7. Do you know when he commenced to make lime there?

Ans. He came on to the farm the year I left, but whether he burned any lime the first year he came or not, I don't know. I know he did burn lime the next year, (1877.) and from that on to the spring of 1881 or 1882, when he left.

Q. 8. You say that while you were in Mr. Eli Hake's employment you were burning lime; state whether or not you had entire charge of

the burning of lime, and burned all that was burned during the time you were there.

Ans. I had and did.

Q. 9. Who made the sales of lime from that kiln?

Ans. That question I could answer if it was put in a different way; Mr. Hake might have made sales to some one, but I always had to measure out the lime and keep an account of it.

Q. 10. State whether or not you did yourself, personally, make sales of lime; and if so, to what extent the sales were made by you or by Mr. Hake himself.

Ans. They were principally all made by me.

Q. 11. State whether or not the sales were made generally to people in that neighborhood whom you knew personally.

Ans. Yes, sir.

Q. 12. Do you know a man by the name of Urias R. Nichols, who formerly lived in Newburg, who had lost one hand, and wore an iron hook on the stump in place of a hand?

Ans. To the best of my knowledge, I never knew him.

Q. 13. State whether or not you sold or delivered any lime to go to any man of that name.

Ans. I never did.

Q. 14. You say that a record of the sales was kept; will you state who kept the record, and in what way it was kept?

Ans. I kept it, and if a man came for lime and paid for it, it was put down so much lime by so and so, marked underneath "paid;" if not paid, charged for the same—the number of bushels.

Q. 15. Where the lime was paid for, would the entry show the number of bushels, as well as the name of the purchaser, and the amount paid?

[*This line of examination, as to the contents and character of the alleged record, objected to as secondary; no proper foundation having been laid for such testimony, and the record not being produced.*]

Ans. Yes, sir.

Q. 16. When you received cash from the sale of lime, what did you ultimately do with it—in what manner did it go to Mr. Hake?

Ans. It was marked "paid" in the book "by cash." I kept this register and he kept the account-book or cash-book taken off of the register. We would take it off to his book every three or four months,

and whatever was marked "cash" or "paid" wasn't taken off on to his book—just what was credited.

Q. 17. When did you hand him over the money you had received; did you do it as you received it, or at these times when your record was examined?

Ans. At these times when we settled; I gave Mr. Hake credit for all that came in cash, and when he and I settled our own matters we settled that betwixt ourselves.

Q. 18. Then, if I understand you, Mr. Hake, at the times of these settlements, tranferred to his own book the sales which had not been paid for; but did not transfer the items which had been paid for?

Ans. Yes, sir

Q. 19. Did this record, which you kept, remain in your custody, or did it remain in Mr. Hake's custody after you left?

Ans. In Mr. Hake's.

Q. 20. Have you recently seen this book and examined it carefully to see if it contains the record of any sales to Mr. Urias R. Nichols during the time that you kept it?

[*So far as the question calls for the contents of the book, it is objected to as secondary.*]

Ans. I have.

Q. 21. What did you find in respect to that fact?

[*Same objection.*]

Ans. I found nothing charged to Mr. Nichols in the book—no charge nor no credit.

Q. 22. Will you state at whose request you made this examination, and when and where you made it?

[*Same objection.*]

Ans. At the request of Mr. Storrow. I made it on the 31st of January, 1883, at Harrisburg.

Q. 23. State whether or not you obtained the book from Mr. Hake and carried it to Harrisburg, and whether you carried it back to him after you had examined it.

Ans. I got the book from Mrs. Hake, Mr. Hake not being at home; I carried it to Harrisburg; and carried it home and examined it thoroughly that night; I returned it to Mr. Hake next day.

Q. 24. State whether or not, at Mr. Storrow's request, you examined specially the record of the sales of lime in the months of December,

1874, and January, February, and March, 1875, to see if you knew personally the parties to whom sales were made during that time, and whether or not they were to people in the neighborhood of the kiln who bought for use on their own premises.

[*Same objection.*]

Ans. I did; they were principally all in my immediate neighborhood, and all to people whom I knew well.

[*Answer objected to by Mr. Hill for the same reason as the question.*]

Q. 25. When did you receive a summons to come here and testify?

Ans. The 13th of February, 1883—yesterday.

Q. 26. State whether or not you were requested to obtain this record, of which you have spoken, to bring with you.

Ans. I was.

Q. 27. If you made any effort to obtain it, state when it was and with what result.

Ans. I did; I left my house to drive to the railroad station, and went to Mr. Hake's on the road, and stopped there and asked if he would give me the book; he answered me "No;" that he wasn't going to give the book to be dragged around any more unless he must.

Q. 28. Did he make any reference to Mr. Drawbaugh in connection with that refusal; if so, what was it?

[*Objected to as calling for hearsay.*]

Ans. Nothing more than when I asked him why he wouldn't give the book, he said that they just wanted to beat Drawbaugh out, and he wasn't going to give it to them.

Q 29. Did you see Mr. Hake again after that, and before you took the train to come here; if so, where was it?

Ans. I did. I met him at New Cumberland, at the depot, when I was getting my ticket to come up in the train. He had drove down there, and he said if I wanted to go to Harrisburg he would take me along up with him in the buggy. I did ride up with him to Harrisburg.

Cross-examined by Mr. Hill:

Cross-Q. 30. Have you been interviewed by Mr. John C. Comfort relative to this case?

Ans. Yes; I suppose I have.

Cross-Q. 31. On what day was it that you saw Mr. Storrow at Harrisburg?

Ans On the 31st of January, 1883.

Cross-Q. 32. At what hour yesterday did you arrive in this city?

Ans. About three o'clock in the afternoon, I guess, or about three-twenty when I got here.

Cross-Q. 33. How far is Hake's lime-kiln from Drawbaugh's shop?

Ans. Fully two miles, I guess, by the road.

Cross-Q. 34. When did you first hear of Mr. Drawbaugh's inventing a telephone or talking-machine?

Ans. To the best of my knowledge I didn't hear of it until this dispute arose, although I live middling close, too, but I never was about Milltown much.

Cross-Q. 35. How far do you live from New Cumberland, and in what direction?

Ans. About three miles, in the direction of Lisburn.

Cross-Q. 36. Do you own the place you live on; if not, who does?

Ans. No, sir; Mr. Henry Bitner owns it.

Cross-Q. 37. Did you ever tell anybody that you had known of Mr. Drawbaugh's telephone about the year 1870?

Ans. No, sir; not that I know of.

Cross-Q. 38. Is your father living?

Ans. Yes, sir.

Cross-Q. 39. What is his name, and where does he live?

Ans. His name is Lewis Kintz, and he lives in Frederick City, Maryland; he went there the year the war broke up—1865.

Cross-Q. 40. Have you any brothers living in York or Cumberland counties?

Ans. I have a brother living in Dauphin county now; he did live in Cumberland county.

Cross-Q. 41. What is his name, and where does he live?

Ans. John Kintz; he lives in the lower end of Harrisburg.

Cross-Q. 42. How many lime-kilns did Mr. Hake operate between the spring of 1870 and the spring of 1876?

Ans. He only run two.

Cross-Q. 43. What was the average annual production of lime at his works in those years?

Ans. I can't tell you that now; but it wasn't a great deal; he didn't carry it on so strong.

Cross-Q. 44. Do you know what the actual working capacity of the kilns was, provided they had been run up to their full capacity?

Ans. They might have run twenty-five or thirty thousand bushels a year, or maybe more, as near as I can tell.

Cross-Q. 45. Were they run all the year round?

Ans. No, sir; not regularly—whenever there was a call for lime.

Cross-Q. 46. Were they run regularly in the winter after the fall of 1874?

Ans. No, sir; I don't think they were, regularly.

Cross-Q. 47. Where did you live while you worked for Mr. Hake?

Ans. In Mr. Hake's house, close to the kilns.

Cross-Q. 48 How did Mr. Hake pay you for your services?

Ans. By the bushel.

Cross-Q. 49. How much per bushel?

Ans. Either three or three and a half cents, I think.

Cross-Q. 50. How much did you make per year out of that business?

Ans. That I can't tell you without the book; the book would show it.

Cross-Q. 51. I don't mean how much did Mr. Hake make, but how much money did you make per year?

Ans. The last question was answered for myself, as the book has my account in it, as well as his.

Cross-Q. 52. Give me the best idea you can as to how much you made out of that business per year.

Ans. I can give you some sort of an idea as to the best year. About the best idea I can give you, or the nearest I could guess at it, would be about four hundred dollars or four hundred and twenty dollars for the best year.

Cross-Q. 53. What year was that?

Ans. I don't know whether it was the first or second year that I was there.

Cross-Q. 54. About how much did you make out of the business in 1875?

Ans. That I can't tell you without the book.

Cross-Q. 55. Can you give me any idea how it compared with the best year?

Ans. No, I can't.

Cross-Q. 56. Had you a family while you lived there?

Ans. A wife and two children.

Cross-Q. 57. Did you support yourself and family out of the proceeds of the lime business, or did you add a little to your income by doing other work when the kilns were not running?

Ans. When the kilns were not running, I was working for Mr. Hake on the farm at harvesting, corn-husking, etc. It was generally brisker after harvest and in the spring, and duller about January and February, to the best of my knowledge.

Cross-Q. 58. You would say that January and February were about the dullest seasons of the year, would you?

Ans. I ain't altogether sure about that without the book.

Cross-Q. 59. Give your best opinion on the subject.

Ans. That is my opinion, as I answered before.

Cross-Q. 60. Please state it again, as I did not understand it.

Ans. I give the same answer as I did before as to that; I said I couldn't be altogether certain without the book; to the best of my opinion I couldn't answer without the book.

Cross-Q. 61. Did you ever go up to visit your father at Frederick City?

Ans. I have been there a couple of times; yes, sir.

Cross-Q. 62. When?

Ans. The first year after he moved out, and about nine years ago, I guess.

Cross-Q. 63. Was that last visit in the summer or winter?

Ans. In the summer.

Cross-Q. 64. Do you swear that you were at the kiln every day during the months of January and February, 1875?

Ans. No, sir.

Cross-Q. 65. Do you remember being away from home during January, 1875?

Ans. Not for any length of time.

Cross-Q. 66. You don't personally know who came there to buy lime while you were away; do you?

Ans. They would either have to come to me or to Mr. Hake, and I would get to know if they came to him.

[*Last part of the answer objected to by Mr. Hill as not responsive, and mere opinion.*]

Cross-Q. 67. I don't ask you what Mr. Hake told you, nor what you learned from the books, but your own personal knowledge. Was there anything to prevent people coming there and buying lime while you were absent from the place?

Ans. No, sir. But when I went away I left somebody to attend to business, and to give me in an account of the lime that went away while I was not there.

[*Respondents' counsel renews his objection to all that part of the witness' examination-in-chief which relates to the character or contents of the alleged account-books or records of the lime business, on the ground that such testimony is secondary, the books not having been produced, nor any proper effort having been made by complainants to get them, and until they shall have been produced, respondents' counsel declines to cross-examine as to any matters relating to them, because, without them, it is impossible to conduct such cross-examination intelligently.*]

Examination taken, reduced to writing, and by the witness sworn and subscribed before me this 14th day of February, 1883.

FRED. M. OTT,
Examiner.

HENRY KINTZ.

Recess for lunch, until 2.30, P. M.

FEBRUARY 14, 1883, 2.30, P. M.

Examination resumed, pursuant to adjournment.

Present, same counsel.

THOMAS R. DAVIS, *being produced, sworn, and examined, saith:*

Examined by Mr. Storrow:

My age is fifty-nine; residence, 1817 Mount Vernon street, Philadelphia, Pennsylvania. I am auditor of disbursements of the Pennsylvania Railroad Company.

Q. 1. In the deposition of James C. Zimmerman, complainants' record, page 664, there was introduced into evidence a certificate signed by you, as to the contents of check and pay-roll 2,520, giving the days in November, 1878, when J. C. Zimmerman worked, and when he did not work, according to said pay-roll. If you have here present the check and pay-roll therein referred to, please exhibit it, and let the examiner take from it a memorandum of the days on which Zimmerman worked, and for which he was paid during that month.

Ans. I produce the book and exhibit it.

[*The examiner compares the record-book with the certificate heretofore introduced into evidence, and finds that said certificate is correct. The certificate appears on page 664 complainants' printed record.*]

These are not the pay-rolls, but the check-rolls. This is the record containing each man's time, and the pay-rolls on which he is paid are made up from this record. The pay-rolls contain the amounts to be paid to each man, and his receipt is taken upon that pay-roll, and not upon this record.

Q. 2. Please to exhibit the check-roll of gang No. 4, J. W. Beers, foreman, for August, 1877, and state on what days of that month James Zimmerman is returned as having worked.

Ans. It is a roll showing the time each man has worked on the road. It is headed "Report of Labor." He worked on the 20th, half a day, and from that on every day until the end of the month, except Sunday. He worked one hunded and five hours, at ten cents an hour.

[*This report is signed by James McCrea, Superintendent of Middle Division, George W. King, supervisor, and J. W. Beers, foreman.*]

Q. 3. It seems from this roll that J. C. Zimmerman did not appear in that gang until 20th August, 1877; I asked you to look through some of the previous check-rolls of that gang and see if you found his name there; did you find it, and have you some of those check-rolls here present?

Ans. I have some of those check-rolls here, and have examined them, and do not find his name in any of them back to May, 1877; I don't know where he was before that time, whether he was working on some other part of the road or not; I couldn't tell that without looking at each individual check-roll.

[*Complainants' counsel states that he intended to have the witness produce the check-roll for the time referred to in the certificate of G. W. King, page 630, complainants' record, but accidentally forgot it, and will send the witness for it if required.*

Respondents' counsel says that he deems it a matter of no consequence and will withdraw the objection heretofore made, so far as it applies to the certificate of Mr. G. W. King, printed on page 630 of complainants' rebutting evidence.]

Cooss-examined by Mr. Hill:

Cross-Q. 4. How far have you looked through the books for Mr. Zimmerman's name in the record of gang No. 4?

Ans. I looked through them from the first of June, 1877, to November, 1878; his name first appears 20th of August, 1877, and he worked from that time every day during the month except Sunday.

In September, 1877, he worked every week day except three, and worked also two Sundays.

October, 1877, he worked 31 days—every day, Sundays included.

November, 1877, he worked every day in the month except three Sundays.

December, 1877, he worked every week day except Christmas and also worked one Sunday.

January, 1878, he worked every week day except the first five days of the month.

February, 1878, he worked every week day in the month.

March, 1878, he worked every week day except one; and also worked one Sunday.

April, 1878, he worked every week day except one; and worked one Sunday.

May, 1878, he worked every week day in the month.

June, 1878, he worked every week day and two Sundays.

July, 1878, he worked every working day except one; and also worked one Sunday and on the 4th of July.

August, 1878, he worked on the following days, 7, 8, 11, 15, 16, 17, 18, 19, 25, 29, 30.

September, 1878, he worked seventeen week days and three Sundays.

October, 1878, his name doesn't appear on Beers' gang at all, but he is returned among the suspended men—every week day up to and including the 22nd, and also worked two Sundays.

November, 1878, he is in the Beers gang, as already stated, and worked eighteen days.

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me this 14th day of January, 1883.

FRED. M. OTT,
Examiner.

THOS. R. DAVIS,
Auditor of Disbursements,
P. R. R. Co.

WILLIAM PECK, *being produced, affirmed, and examined, saith:*

Examined by Mr. Storrow:

My age is sixty-six; residence, Steelton, Dauphin county, Pennsylvania; occupation, miller.

Q. 1. Were you ever miller for Jacob Kunkle, at Kunkle's mill, at Lisburn?

Ans. Yes, sir.

Q. 2. When did you quit milling for him?

Ans. In 1880.

Q. 3. How long had you been miller for him before that?

Ans. I was milling for Jake Kunkle six years.

Q. 4. What time of the year did you begin—spring or fall?

Ans. Spring.

Q. 5. Did you mill for him, at his mill, all the time during those six years, from the spring of 1874 to the spring of 1880?

Ans. Yes, sir.

Q. 6. Before you went to Jacob Kunkle's mill, in the spring of 1874, had you ever seen a Drawbaugh patent mill-tram, and if so, at what mill?

Ans. I saw it at Ross' mill, in York county, near New Market, just below New Cumberland; that was about five years before I went to Kunkle's mill.

Q. 7. Did you have at Jacob Kunkle's mill, during the six years while you were his miller, or any part of them, a Drawbaugh patent mill-tram?

Ans. No, sir.

Q. 8. What kind of a tram was it that you had there at Kunkle's mill from 1874 to 1880?

Ans. We always called it the long red-staff—an old-fashioned red-staff.

Q. 9. Did Mr. Kunkle have, or did you have, a diamond mill-stone dressing machine, to use at Mr. Kunkle's mill, at any time while you were there?

Ans. No, sir; not in the mill.

Q. 10. Did any man ever come along with a diamond mill-dressing machine, and try to dress one of your mill-burrs for you while you were there, or propose to you to buy the mill-dressing machine; and if so, how many times did that happen?

Ans. There was two different machines brought there at two different times; the one done dressing, the other didn't; both were for sale.

Q. 11. Did either of the men who brought them tell you where they were invented, or who invented them; and if so, what did they say about it?

Ans. The first one that came there, the man said he was the in-

ventor and came from Pottsville; the other one didn't say where he was from nor who was the inventor; I didn't ask him nothing about it; he wasn't in the mill with it.

Q. 12. Which of those two did the dressing of the burr?

Ans. The Pottsville man.

Q. 13. Did the other man take his machine into the mill or not?

Ans. He didn't take it in.

Q. 14. Were there any one-armed men who came to Jacob Kunkle's mill during the six years while you were miller there; and if so, who were they?

Ans. There were three of them; one was Michael P. Smyser; another was John B. Rudy; the third was a peddler I didn't know.

Q. 15. What did that peddler peddle and did he carry his things in a cart or in a wagon or on his back?

Ans. It was in a basket or a bundle; I am not able to say; he peddled suspenders, stockings, ribbons, and all such notions.

Q. 16. During the time while you were miller for Jacob Kunkle there lived at or near Lewisberry a man by the name of Urias R. Nichols, who had lost one hand and part of his arm; was he ever at the mill, to your recollection?

Ans. No, sir; I don't know the man; I know nothing of him.

Cross-examined by Mr. Hill:

Cross-Q. 17. The Rosses owned the mill at New Cumberland besides the mill at New Market; did they not?

Ans. Yes, they do now, but the same Ross that owns it now didn't own it then. That is, the old gentleman owned the one on the Cumberland side, and the young man owned the one on the York side, both being fed from the same dam. On the death of his father the young man bought the mill from his estate, and now he owns them both. The mill I worked at was in New Market, which is the one on the York side.

Cross-Q. 18. Where did you live and work during the six years immediately prior to your going to work at Kunkle's mill at Lisburn?

Ans. I went from the Lisburn mill, which Kunkle didn't own at that time, to the New Market mill, and worked there a year. I then went to Booser's mill, Highspire, Dauphin county, and worked there two years. Then I lived private three years, and was in no business—I lived at Highspire, and was constable. After that I went to Kunkle's mill, at Lisburn, as I testified in my direct examination; this was in the spring of 1874.

Cross-Q. 19. Did you ever know of a diamond burr-dressing machine made by Daniel Drawbaugh, of Eberly's Mills; or hear of it?

Ans. No, sir; I never did.

Cross-Q. 20. When the Pottsville man came to Kunkle's mill with his diamond burr-dressing machine, did he dress a millstone or two with it?

Ans. He only dressed what we call two quarters of a burr. We call each space between the leading furrows on the stone a quarter. There are sometimes twelve or fifteen quarters on a stone.

Cross-Q. 21. Were you present when he dressed that stone?

Ans. I was present till he put the machine on; then I left him.

Cross-Q. 22. How long was he at work dressing the stone?

Ans. I think about fifteen minutes.

Cross-Q. 23. Were you about in the mill during those fifteen minutes?

Ans. Yes, sir.

Cross Q. 24. Was anyone else besides yourself and the Pottsville man in the mill while he was dressing the stone?

Ans. Yes, sir; my miller, James Kunkle.

Cross-Q. 25. Nobody else?

Ans. Not that I recollect.

Cross-Q. 26. The one-armed peddler wasn't there at that time, was he?

Ans. No, sir.

Redirect by Mr. Storrow:

Q. Q. 27. Was James Kunkle, whom you have mentioned, any relation of Jacob Kunkle?

Ans. A son of Jacob's.

Q. Q. 28. Did he work in the mill with you the first year you were there?

Ans. No, sir.

Q. Q. 29. Did he work in the mill with you the second year you were there?

Ans. No, sir.

Q. Q. 30. Did he work in the mill with you the third year you were there?

Ans. No, sir.

Re-cross by Mr. Hill:

Re-cross-Q. 31. What year did he work with you in the mill?

Ans. The last three years—1877, 1878, and 1879.

Re-cross-Q. 32. Do you mean from the 1st of April, 1877, to the 1st of April, 1880?

Ans. He worked for me them three years.

Re-cross-Q. 33. Who worked with you there in 1874?

Ans. Ira Booser.

Re-cross-Q. 34. Where does he live?

Ans. At Highspire.

Examination taken, reduced to writing, and by the witness affirmed and subscribed to before me, this 14th day of February, 1883.

FRED. M. OTT,
Examiner.

WILLIAM PECK.

Adjourned until February 15, 1883, at ten, A. M.

FEBRUARY 15, 1883, 10, A. M.

Examination resumed, pursuant to adjournment.

Present, same counsel.

WILSON N. MILLER, *being produced, sworn, and examined, saith:*

Examined by Mr. Storrow:

Q. 1. Are you the same Wilson Miller who has heretofore given a deposition in this case, printed on page 671 of respondents' printed record?

Ans. I am.

Q. 2. You therein testified in substance that you had charge of the warehouse of your father, Mr. J. R. Miller, at White Hill, from the beginning of 1876 to the spring of 1878; did you keep the account-books of that warehouse during that time?

Ans. Yes, sir.

Q. 3. Did you, while there in charge of that warehouse for your father, sell coal to Mr. Drawbaugh on credit; and if so, will you please produce your account-book and show his accounts, in order that the examiner may copy it on the record?

Ans. I did. I produce the account-book. Mr. Drawbaugh's account is on page 160 of the ledger, and is as follows:

"*Dr.* DANIEL DRAWBAUGH, *Cr.*

1876.					
Dec. 14,	to coal 76, . . .	$1 93	Apr. 4, by cash, ...		$6 31
1877.					
March 30, "	" 107, . .	2 81			
Nov. 23, "	" 169, . .	1 57			
		$6 31			

Q. 4. Will you please point out in your day-book the three items contained in that account, in order that the examiner may copy it upon the record?

Ans. Yes, sir. I produce the day-book. The items are as follows:

Page 76, "(160) Daniel Drawbaugh,
To 1,550 lbs. Sha. Pea coal, $2 50, ... $1 93"

Page 107, "(160) Daniel Drawbaugh,
"To 1,500 lbs. coal, $3 75, ... 2 81"

Page 169, "(160) Daniel Drawbaugh,
"To 900 lbs. L. V. B. Nut coal, $3 50, ... 1 57"

[*Cross-examination waived by Mr. Hill.*]

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me this 15th day of February, 1883.

FRED. M. OTT,
Examiner.

WILSON N. MILLER.

Adjourned until February 16, 1883, at ten, A. M.

FEBRUARY 16, 1883, 10, A. M.

Examination resumed, pursuant to adjournment.

Present, Mr. Storrow for complainants, and Mr. Hill and Mr. Jacobs for respondents.

GEORGE LEONARD, *being produced, sworn, and examined, saith:*

Examined by Mr. Storrow:

I am the witness whose deposition is found in the defendants' record, page 725.

Q. 1. State where you lived the last twelve years.

Ans. In the beginning of 1871 I bought from Christian Eberly the

grist-mill and a number of houses, at Eberly's Mills; I moved there about the first of April, 1871, and lived there until about the first of April, 1878; I then moved to New Kingston, which is about ten miles from Eberly's Mills; I do not live in the town of Kingston, but on a farm, a short distance from the town; I am a farmer.

Q. 2. I wish to inquire concerning any financial transactions that were between you and Mr. Daniel Drawbaugh; will you please produce your account-books containing the accounts of your dealings with him?

Ans. I produce two books, in which I think all my dealings with him are set down. I produce my ledger; the first account is on page 6; it is partly in my handwriting, and partly in the handwriting of one of my millers. It begins March 29, 1871, and runs to April 15, 1872, before being balanced. The charges against him are for flour, feed, and one charge of $1 75 for hauling metal. The charges amount to $20 34; among the credits are two items, one of which is $8 for hanging a master-wheel; another is for $2 45, which, I think, is for work in the mill, though it is not stated what it is for. The final balance, $8 79, is credited by cash, April 15, 1872. A new account then begins on the same page, April 24, 1872, and continues on pages 6, 7, and 98, to April 5, 1874. The charges are for corn, flour, feed, etc., and $5 cash, April 5, 1874. Among the credits are items amounting to $30 25, not expressed as cash; some of these are expressed to be for work done on the mill, and the others, I think, are for work. There are some cash items of credit, and the whole is balanced as follows:

"April 1, 1874, by note $25 00." That ends the account in this ledger.

[*Complainants' counsel puts in evidence a copy of this account to be marked Leonard–Drawbaugh account.*"]

The other ledger is in Cyrus Bowman's handwriting and Drawbaugh's account in it has already been printed on page 669 of complainants' record. The last credit in it is, "December 31, 1875, by cash to Leonard, $14 93." I think that was paid in cash, though I do not really know; I think if it had been paid by a note it would have said "credit by note."

Q. 3. In the deposition of Mr. Drawbaugh, page 887, defendants' printed record, there appears a note dated April 26, 1873, signed by George W. Kissinger and Daniel Drawbaugh, payable to you for $60 30, thirty days after date; will you tell me how you came to take that note and whom you took it from?

Ans. I took it from Mr. Kissinger; I understood that Mr. Drawbaugh—Mr. Kissinger told me that Mr. Drawbaugh owed him a store bill, and he said Mr. Drawbaugh would go his security for the money. If I advanced it Mr. Drawbaugh would pay me. I consented to do so, as they said it would be a little accommodation to both parties. I advanced the money to Mr. Kissinger; he wanted to use the money and Mr. Drawbaugh couldn't just make it to him at present—at that time.

Q. 4 There has been put in evidence in Mr. Drawbaugh's deposition, defendants' record, page 894, a note dated December 31, 1875, according to which Mr. Drawbaugh promised to pay to you $103, one day after date, and the note ran several years before it was paid in full; do you remember taking that note?

Ans. Yes, sir.

Q. 5. Was the Kissinger-Drawbaugh note of $60 paid the same season it was given; and was there any connection between the $103 note and the $60 note, and if so, what?

Ans. He had run another mill account and we put the two together. I suppose I gave him up the old note when I took the new one—that was generally the way I done—always kept it in one note.

Q. 6. Then the old note, signed by Drawbaugh and Kissinger, was settled by taking for it the new note of Drawbaugh alone, which included the $60, and some other things; is that the fact?

Ans. Yes, sir; to the best of my knowledge. We had some other dealings, I suppose, besides the mill account; it was satisfactory to us both when I took the note.

Q. 7. Do you remember whether you ever lent Drawbaugh, from time to time, small sums of money besides what was included in those notes?

Ans. Oh, I might have lent him a little, now and then, when he was feeling a little pinched, but he would always pay it back without giving any note.

Q. 8. If he had had a talking-machine, by which conversation could be carried on between one place and another along a wire, and had come to you and represented that there was a fortune in it if he could only raise money to pay the fees and expense for getting it patented, do you think his credit was good enough for you to have lent him twenty-five or fifty dollars for that purpose at any time while he lived in Milltown, and owned his house there?

[*Objected to as indefinite and obscure, as hypothetical, argumentative, incompetent, leading and calling for the mere opinion of the witness.*]

Ans. I don't think that Mr. Drawbaugh ever made that proposition to me. I have no recollection of it.

Q. 9. If he had made that proposition?

[*Same objection.*]

Ans. It is pretty hard for me to say. I was always ready to make money, and if I could have seen that there was money in it——

Q. 10. How did his family compare, for dress and general condition, with the other families of Eberly's Mills; were they as well dressed as the others, or not?

[*Objected to as incompetent, and, so far as the words "general condition" are concerned, indefinite and obscure.*]

Ans. They were always respectable; they were counted so by my family in every respect

Q. 11 How was the furniture and furnishing of his house as compared with others in the neighborhood?

[*Objected to as incompetent.*]

Ans. I consider it as good as ours that we have. In regard to other families, I couldn't say.

Q. 12. Do you remember of Mr. Drawbaugh's moving to Mechanicsburg in the spring of 1876, and moving back in the spring of 1877, and did you help to haul his furniture on either of those occasions?

Ans. Yes; I was along with the party.

Q. 13. Do you remember what other teams were along, and if so, please state which you remember?

Ans. I think Mr. William Sadler was along, and I think Mr. Fred. Sheely's team was another; I really don't know—there was two or three teams along, but I can't say whose they were. I think one was a Free. I think there was something like three big teams.

Q. 14. How big a team did you have?

Ans. I just had a one-horse team; I just took some of the women and some small things along.

Q. 15. Do you remember Ephraim R. Holsinger, a printer, who lived at Eberly's Mills from the fall of 1873 till the fall of 1876, and did he live in one of your houses?

Ans. Yes, sir.

Q. 16. In your ledger I find on page 107 an account in his name, and one of the credits is "1874, August 15, by order on D. Drawbaugh $10." Do you remember the fact of his giving you an order on Drawbaugh which you took in part payment of the account which Holsinger owed you?

Ans. I suppose Drawbaugh owed him—that he gave him an order. And Holsinger afterwards gave me a note for the balance and paid it afterwards. Here is where we settled. That is in Holsinger's own handwriting: Holsinger turned the order over to me and I took Mr. Drawbaugh for it and I don't know what dealings they had, for my part.

Cross-examined by Mr. Hill:

Cross-Q. 17. Referring to the account on your book with Mr. Holsinger, please point out to the examiner the first and last items of that account, indicating at the same time the dates of the two items, in order that the examiner may copy them upon the record.

Ans. The account is on pages 106, 107, and 110. He hired a house of me September 12, 1873; that is the day he came. The last item, July 4, 1876, being a promissory note for balance of account that he owed me at that date; that was the last of our dealings. I sold the property to another man in the spring of 1876; Holsinger lived on there after I sold it until five or six months, I think, after he gave me the note; and he paid me before he left the place. He was a little over three years there.

The first item is as follows:

"1873
Sep 12, Holsinger Rent on stone house is to be fifty dollars for one year and to be paid monthly."

The last item is:

"1876, July 4, By Prosery Note $6. 00."

Cross-Q. 18. Which house do you call the stone house that he lived in?

Ans. It was the old house, formerly a mill, partly of stone and partly of frame. He lived in the stone part; I think there were four tenements in the house at the time. It was a block and the separate tenements had their own front doors.

Cross-Q. 19. While Cyrus Bowman was running the mill, I understand, from his testimony in this case, that he was in partnership with you in buying and selling grain, but that he ran the mill as your tenant paying the hands himself; am I correct in that?

Ans. Yes, sir; he had the mill on the shares and we bought the

grain in partnership; what hands he had in the mill of course he paid himself; I regarded him as my tenant in the mill.

Cross-Q. 20. In one of your ledgers which you have produced here to-day, I find an account made out in the name of the Cedar Spring mill; what mill was that; was it the one that Bowman had charge of?

Ans. Yes, sir; it went by that name.

Cross-Q. 21. Cyrus Bowman has testified that the business of the mill while he ran it was carried on in the name of Leonard & Bowman. I have looked through both of your ledgers and can find no account of Leonard & Bowman; is there any account in that name?

Ans. No, sir; I don't think there is. When he came there I rented to him on the shares. Then he wanted to go into partnership; and I let him go into partnership in buying grain, thinking he would do better that way. Then he ran out of money and I had to pay it all. The partnership was just between ourselves and was never announced publicly. I think Holsinger struck us a few billheads the first year for retailing that we done in Harrisburg, but the second year we didn't buy much and what we did buy I paid for myself. He did the grinding and the retailing in the mill.

Cross-Q. 22. Then am I to understand that your partnership with Bowman in buying and selling grain existed only during the first year that Mr. Bowman ran the mill?

[*This line of examination objected to by complainants' counsel as irrelevant to anything brought out on the direct examination.*]

Ans. Yes, sir; there was some wheat on hand that we ground the second year on partnership, but we didn't buy any in partnership; I bought all that year myself.

Cross-Q. 23. If I understand you correctly, then the facts are these: Bowman took charge of the mill, April 1, 1874. During the year following you and he bought and sold grain in partnership. From and after the 1st of April, 1875, you bought no grain in partnership, but did grind and dispose of whatever grain had remained over from the first year; am I right?

[*Same objection.*]

Ans. Yes, sir; that is right.

Cross-Q. 24. Did you get that old grain ground and disposed of that year before the new grain came in after harvest?

[*Same objection.*]

Ans. I think there was a little old grain on hand at harvest that we ground afterwards. He kept possession of the mill till the 1st of March, 1876, when he moved further up the valley to a mill that he had bought.

Cross-Q. 25. Do you think the old grain was ground and disposed of before the 1st of January, 1876?

[*Same objection.*]

Ans. Yes, I think so; if there was any on hand after harvest it was very little. I knew we could have got it out if we had wanted to.

Cross-Q. 26. So far as the mill ran on custom work, while Bowman was there he ran it on his own account, and paid you a certain share of the tolls as a consideration for the use of the mill, or in other words, rent; am I correct?

[*Same objection.*]

Ans. Yes, sir; he gave me two thirds and he got one third of the tolls, and I gave him a house free; that was our bargain.

Cross-Q. 27. Referring to the $60 note which you mentioned in your examination-in-chief, Mr. Drawbaugh testified that he couldn't tell positively when it was paid, but thought it was paid when he got the Hauck money, which would be about the first of August, 1873, a little over three months from the date of the note, and a little over two months after the note matured. Are you sure that it was not paid in money at that time?

Ans. Oh, yes, I am.

Cross-Q. 28. Was not any part of it paid then?

Ans. No; the note laid over until the next year, when we had settlement, and it was all put into a new note, amounting to $103; I think in that neighborhood. The $103 note wasn't paid all at one time, as the indorsements on it will show; the last of it wasn't paid till 1880 or 1881.

Cross-Q. 29. But the $103 note was not made till December 31, 1875, over two years and eight months after the date of the $60 note; do you think the $60 note was carried along for that length of time?

Ans. Yes, sir.

Recess for lunch until 2.30, P. M.

FEBRUARY 16, 1883, 2.30, P. M.

Examination resumed pursuant to adjournment.

Present, same counsel.

Cross-examination of George Leonard, by Mr. Hill, continued:

Cross-Q. 30. Mr. Drawbaugh thought that note of December 31, 1875, for $103, was for goods that he got out of the mill—flour, feed, etc.—was it, or not, in part for goods?

Ans. It was in part; and that $60 note was still carried along and put into the new note, to the best of my recollection; I am satisfied that is so.

Cross-Q. 31. Are you sure that no part of the $60 note was paid before the new note was given?

Ans. I can't say as to that, but I know the balance was carried along when the new note was given. There might have been a little credit on that note, too.

Cross-Q. 32. By credit on the note do you mean some credit indorsed on the note?

Ans. Yes, sir; there may have been some credit on it, and when he gave the new note we put it all together. Mr. Drawbaugh wasn't the only man I took notes from; I had so many that I couldn't mind the payments on them; and when one of them gave me any money I credited it on the note.

Cross-Q. 33. Might you have received any money from Mr. Drawbaugh after the $60 note matured, and before December 31, 1875, which was intended as a payment on that note, but was not credited on the note, but was accounted for when the new note was given, December 31, 1875?

Ans. No, sir; after we settled and we took the $103 note we never had any more dealings till he paid the note He never got any flour or feed from me after that, to the best of my knowledge.

Cross-Q. 34. You don't understand my question; I didn't mean after the $103 note was given; what I meant was this: After the $60 note was given and before the $103 note was given, might not Drawbaugh have paid you something on account of the $60 note, which was not credited on the note, but was accounted for on the settlement when the new note of $103 was given?

Ans. I am satisfied that he didn't pay me anything to go on the note, but what I credited it right on the note at the time. If he paid me any-

thing between the two notes it was to go on the book account there. Whenever he paid me anything to go on the note I put it right on the note; that was the understanding.

Cross-Q. 35. In the Daniel Drawbaugh account, on page 98 of your ledger, the year noted at the top of the page is 1873. Directly under it are two columns, one indicating the month and the other indicating the days of the month; the first item is entered March 7th; that means March 7th, 1873; does it not?

Ans. Yes, sir.

Cross-Q. 36. The second entry below that is "Jan 29"—does that mean January 29, 1874?

Ans. I suppose it must; it ought to be; I suppose the date is omitted; I can say nothing but what the books testify. This is not in my handwriting, but that of one of my millers. I don't remember which one. All these items were entered before Bowman came in; I got him a new book when he came in. There were two or three millers that I hired by the month during the time that this account ran. Bowman came April 1st, 1874.

Cross-Q. 37. In your examination-in-chief, you were asked something about Drawbaugh's telephone, or talking-machine. When you were examined at Harrisburg, a little over a year ago—perhaps a year and a half ago—you testified that, prior to the Centennial year, Mr. Drawbaugh spoke to you about his talking-machine, did you not? I refer to your 16th answer, on page 727, respondents' printed record.

[*Question objected to because it is a reëxamination of defendants' witness upon evidence introduced by the defendants, and because the substance and purport of the testimony referred to is that the time when the witness thought he had heard of it was before their visit to the Centennial, in the fall of* 1876, *and not before the Centennial year.*

To the latter part of the objection, Mr. Hill replies, that complainants' counsel is evidently in error as to the substance of the former testimony, which was, that it was "some time between the years 1871 *and* 1876*;" and if it was some time between those years, it was necessarily prior to the Centennial year.*]

Ans. Yes, that was what I was called on, in part.

Cross-Q. 38. You mean that was a part of what you were examined on?

[*Same objection as above.*]

Ans. Yes, that was my understanding of what I was called on.

Cross-Q. 39. And you meant by your answer that it was some time between the years 1871 and 1876, that he talked to you about working on his talking-machine, didn't you?

[*Same objection.*]

Ans. Yes, it was in that bounds of time; I never expected to be asked no more about it—I paid no attention after that.

Redirect by Mr. Storrow de bene esse:

Q. Q. 40. You lived at Eberly's Mills from the spring of 1871, to the spring of 1878, did you not?

Ans. Yes, sir.

Q. Q. 41. Are you ready to swear positively that you ever heard of Drawbaugh's talking machine before the fall of 1876?

[*Objected to as leading.*]

Ans. Yes, it was while I lived there; it was between the time I moved there, and the time I moved away; it might have been in the year 1876, but it was while I lived there; there was very little talk between Mr. Drawbaugh and me about it.

Q. Q. 42. Who took possession of the mill when Mr. Cyrus Bowman left it?

Ans. Dellinger & May.

Q. Q. 43. Were they tenants of yours, or had you sold the mill to them?

Ans. I had sold it to them.

Re-cross by Mr. Hill.

Re-cross-Q. 44. You went to the Centennial in October, 1876, did you not?

Ans. Yes, sir.

Re-cross-Q. 45. Before you went to the Centennial you had heard of Mr. Drawbaugh's talking-machine, had you not?

[*Same objection as to question* 37.]

Ans. I suppose that I did; I couldn't say positively. I heard of it while I lived there; I paid so little attention to it that I could hardly say, because I didn't know there was any money in it.

Re-cross-Q. 46. Do you remember where you were when Drawbaugh first spoke to you about the talking-machine?

[*Same objection as to question* 37.]

Ans. It was either about the grist-mill, or his machine-shop, I suppose; I don't recollect.

Re cross-Q. 47. Do you remember his speaking to you about it when you and he were riding together in a wagon, one time?

[*Same objection.*]

Ans. No, sir; I have no recollection of it; I don't say he didn't, but I don't recollect nothing of it.

Re-cross-Q. 48. Is it still your best recollection and belief that he spoke to you about it between the year 1871 and the year 1876?

[*Same objection, and further, that the witness should be made to understand whether the question includes the year* 1876, *or only includes the year* 1875. *Question withdrawn, and the following question substituted:*]

Re-cross-Q. 49. Is it still your best recollection and belief that he spoke to you about it before the beginning of the year 1876?

[*Same general objection.*]

Ans. I wouldn't like to confine myself to more than between the years 1872 and 1877. In the first year, 1871, I was a stranger, and was very little at the machine-shop, as my mill was out of repair and credit and needed all my attention. In 1873 I was away a good deal; it was between 1872 and 1877 that it was spoken of that I heard it.

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me, this 16th day of February, 1883.

FRED. M. OTT,
Examiner.

GEO. LEONARD.

JACOB SINGER, *being produced, sworn, and examined, saith:*

Examined by Mr. Storrow:

My age is forty-one; residence, Harrisburg, Penna.; occupation, furniture dealer, at the corner of Second and Chestnut streets.

Q. 1. Do you know Mr. Theophilus Weaver?

Ans. I do.

Q. 2. Did Mr. Weaver ever take out a patent for you, and if so, when was it, and what was it for?

Ans. Yes, sir; it was for car-couplings; it was in 1874, but I forget, now, what month.

Q. 3. Did you, in connection with that business, or in any other business transactions with Mr. Weaver, if you have ever had any, find or think that he behaved or attempted to behave dishonorably or dishonestly, or improperly in any way?

[*Objected to as incompetent, irrelevant, and leading.*]

Ans. Not to my knowledge, he did not.

Q. 4. Have you and he always been on friendly terms up to the present time, since you first knew him?

[*Same objection.*]

Ans. Yes, sir.

Q. 5. Do you know Mr. Edgar W. Chellis, who keeps the 99 cent store at Harrisburg?

Ans. Yes, sir.

Q. 6. Has he been to see you, and inquired of you about your relations with Mr. Weaver; and if so, when was it?

Ans. He has, this last summer; it was, as I understood afterwards, during the investigation in the matter that was being held in Harrisburg. I can't tell the month.

Cross-examination waived by Mr. Hill.

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me, this 16th day of February, 1883.

FRED. M. OTT,
Examiner.

JACOB SINGER.

EPHRIAM R. HOLSINGER, *being produced, sworn, and examined, saith:*

Examined by Mr. Storrow:

I am the same Ephraim R. Holsinger who was examined on behalf of the defendants, and whose deposition is on page 376, of defendants' record.

Q. 1. While you lived at Eberly's Mills, which was from September, 1873, to November 27, 1876, did you carry on the printing business?

Ans. During part of the time I did.

Q. 2. Please look at the printed paper I now show you, headed "The River Echo Job Printing Office, Eberly's Mills, Pa., Saturday, March 14, 1874;" state whether or not you printed and published that sheet while you lived at Eberly's Mills, and on or about the date therein stated.

Ans. I did.

[*Mr. Storrow requests the examiner to have a photo-lithographic fac-simile of said paper made, of the same size as the original, and to put the same in evidence, the original to be produced when called for.*

Objected to by Mr. Hill, as immaterial and irrelevant.]

Q. 3. Please look at the printed paper which I now show you, headed "The Cumberland County Horticultural Journal, Vol. 1. April, 1874, No. 1. 1 year, Eberly's Mills, Pa., 50 cts.," and state whether you printed and published that while you lived at Eberly's Mills, and on the date therein stated.

Ans. I did.

(*Same request by Mr. Storrow as made respecting the previous paper, and same objection by Mr. Hill.*)

Q. 4. Please look at the printed paper now shown you entitled "The Cumberland County Horticultural Journal, Vol. 1, Eberly's Mills, Cumberland County, Penna., No. 1. Price per year. June, 1874. 50 cts." And state whether you printed and published it while you lived at Eberly's Mills, and at the date therein stated.

Ans. About that time I published it.

Q. 5. The type from which this paper of June, 1874, is printed seems to be different from the type from which the paper of April, 1874, is printed; is that the fact, and how did it happen to be so?

[*Objected to as immaterial.*]

Ans. Shortly after I published the paper of April, 1874, Mr. Henry S. Rupp proposed that I should make an attempt to publish a better paper, and about the same time asked me whether I could print for him a catalogue of his nursery stock, if I had the type to do it with; I told him I could; then he proposed to furnish me money in advance, to get the type, which he did. I think he gave me fifteen dollars, and Dan Drawbaugh gave me five dollars, which I used in getting type and paper for the job; thus I came to be better prepared or able to print the paper of June, 1874.

Q. 6. I understand from your answer that you bought the type between the time when the April paper was published and the time when the June paper was published; will you state, as nearly as you can, within what part of that period the paper was procured?

Ans. I can give no definite answer, but think it was between the fifteenth of May and the first of June.

Q. 7. This paper has a printed page about ten inches long and five inches and a half wide; there are four pages of reading matter and two pages of advertisements; is that the fact about it?

[*Objected to as immaterial.*]

Ans. Yes, sir.

Q. 8. In the *Horticultural Journal* of June, 1874, on the first page of the advertisements, I find the following:

"FREE NOTICES:

"The following business houses have favored this office with an or-
"der for billheads, envelopes, labels, statements, circulars, &c., &c."

Then follow a list of names with the occupations of the several parties; the last but one of these is as follows:

"Dan'l Drawbaugh, Eberly's Mills, Pa.
"Inventor, Designer, and Solicitor of Patents."

Is this found in the paper on page 5?

[*Statements of the paper objected to as incompetent.*]

Ans. Yes, sir.

[*Complainants' counsel requests the examiner to have prepared a photo-lithograph of the first and fifth pages of said paper, reducing the size so that they can conveniently be bound up with the evidence of the case, and to put the same in evidence, the original to be marked and produced when called for.*]

Objected to by Mr. Hill, as immaterial and incompetent.]

Q. 9. Please look at the advertising card which I now show you, and state whether you printed it while you lived at Eberly's Mills.

Ans. Yes, sir.

[*Objected to as immaterial.*]

Q. 10. State, as near as you can recollect, how many of them you printed.

[*Same objection.*]

Ans. I printed one hundred and fifty the first time, and think I printed a second lot of one hundred and fifty; I am not positive as to the second lot.

Q. 11. Did you deliver them to Mr. Daniel Drawbaugh, and did he pay you for them?

[*Same objection.*]

Ans. Yes, sir; I think he came to the office and got them; the un-

derstanding as regards paying for them was in consideration of the five dollars that Drawbaugh had given me.

Q. 12. Was the first lot of them printed after he had given you the five dollars?

[*Same objection*]

Ans. It would seem so from the fact that the type which I got with the money given me by Rupp and Drawbaugh, is used on the card, which I did not have before I received that money; the card is printed on both sides, and is as follows:

(Copy of printed card.)

Daniel Drawbaugh,

INVENTOR, DESIGNER

and

SOLICITOR OF PATENTS.

Also Models Neatly Made to Order.

EBERLY'S MILLS,

Cumberland County, Pennsylvania.

[See Other Side.]

DAN'L DRAWBAUGH,

INVENTOR OF

THE FOLLOWING PATENTS.

Stave, Heading & Shingle Cutter.
Barrel Machinery.
STAVE JOINTING MACHINE, Many in use.
Tram & Red-staff for leveling face of Millstone.
Rine and Driver for running Millstone.
Nail Machinery for Feeding Nail Plates.
PUMPS, ROTARAY & OTHERS,
Hydraulic Ram.
THE DRAWBAUGH Rotary Measuring Faucet, very extensively used.
CARPET RAG LOOPER-A little device by which rags are looped quick and firm, without Needle or Thread.
ELLECTRIC CLOCK.

MAGNETO ELECTRIC MACHINE,

For short line Telegraphing. Fire Alarm, and Propelling Electric Clocks. It can be applied to any form of Electric movement. Gives entire satisfaction USEING NO *GALVANIC BATTERY.*—
For SIMPLICITY it has NO RIVAL.

[*Complainant's counsel requests the examiner to prepare photo-lithographic fac-similes of both sides of the card, and of the same size as the original; and to put them in evidence, the original to be produced when called for.*

[*Objected to by Mr. Hill as immaterial and irrelevant.*]

Q. 13. In the deposition of Daniel Drawbaugh, defendant's record, page 896, there was introduced into evidence a printed bill head of Mr. Drawbaugh's; and on page 996 Mr. Drawbaugh testified that you printed them while you were at Eberly's Mills, but that he didn't remember when they were printed. Please state your recollection as to the time when they were printed?

Ans. I have no recollection when they were printed, but think I printed several times for Mr. Drawbaugh.

Q. 14. Do you remember printing some bill heads for him in the same fall that you moved away from Eberly's Mills?

[*Objected to as leading.*]

Ans. Positively, I do not; I mean I am not positive that I done so.

Q. 15. State what your recollection is on the subject?

Ans. I find a foot-note in my book saying that what was due Daniel Drawbaugh shortly before I left in 1876, I done him some printing and gave him some paper for.

[*Statement of the foot-note objected to as incompetent and secondary.*

Q. 16. While you lived at Eberly's Mills you wrote some articles which were published in the *Carlisle Mirror*, a newspaper published in Carlisle, Cumberland county, Penna., did you not?

[*Objected to as immaterial and irrelevant.*]

Ans. Yes, sir.

Q. 17. I point out to you in the *Carlisle Mirror*, of Nov. 5, 1875, an article headed: "From Eberly's Mills" and signed "River Echo"; did you write that; and if so please send it to the examiner as part of your answer?

[*Same objection.*]

Ans. I did; the article is as follows:

"FROM EBERLY'S MILLS.

"Hipporhinnophlegmatoblenoctologatalamous — that's what's the "matter with the horses now-a-days. Some call it 'zootic. A good "many horses in our neighborhood have it, but no serious cases have "yet been reported.

"In this neighborhood many hogs have gone the way of all flesh be- "fore their time, this fall. Our friend Zimmerman lost about $200 "worth, Renard about $150. worth, and Hartman about $200 worth. "Many others have suffered smaller losses.

"A very valuable cow died of the epizootic a few weeks ago.

"Our farmers are about done husking corn and are beginning to fix "up behind their stoves for a Winter's rest. Corn was good you know.

"Everything appears to be plenty around us but apples. Our mouth "waters when we think of that luscious fruit.

"A few cold days have drawn out some thoughts about preparing for "winter. One prepared for cold by putting in at the mouth, which "caused some funny thoughts to come forth—in fact revealed some of his "hidden treasures. Better hide next time.

"The new store building is finished, and a few goods and the post- "office placed therein. So much in the place of the one blown up by "the keg of powder last winter.

"Butchering time is just commencing, and as it has ever been we "hope it will be this year also; the printer will not be forgotten when "the breakfast curls are handed around. Oh ye farmers!

"The Wilson who was killed on P. R. R., near Oakland Station was "our store keeper when the store blew up last winter. We feel very "sorry for him and his poor widowed mother. Just a little over a year "ago his father fell dead in the corn-field while husking corn.

RIVER ECHO.

Q. 18. I point out to you, in the *Carlisle Mirror*, of November 12, 1875, an article headed "Eberly's Mills," and signed "River Echo;" did you write it, and if so, please read it as part of your answer.

[*Same objection.*]

Ans. I did; it is as follows:

"FROM EBERLY'S MILLS.

"The mighty corn-husker in our end of the county is Mr. Orlando "Kahney, near this place. He relieved eighty large shocks of their ears "in one day. He don't brag or banter, but would like to know who "the man is that can beat him.

"Somebody thinks that a good load of buckwheat straw, properly "applied to the depot, at White Hill Station, on C. V. R. R., would add "considerably to the accommodation of the travelers who take passage "at that point.

"There is a little boy in our place who has quite a moustache, and "we call him 'Shorty,' for he is only 4½ feet old and 32 years long. He "thinks some of his moustache, for naturally it has a very odd look "about it, and when he wants to shine, he blacks it, of course.

"He is not married, but would like to correspond with the prettiest "young lady in this valley. Who is she, and where does she live? "Please tell him.

RIVER ECHO.

"Several interesting items from the above source have been crowded "out, but will appear in our next.—ED. MIRROR."

Q. 19. Who is the person referred to in this article as "Shorty"?

[*Same objection.*]

Ans. Harmon K. Drawbaugh, sometimes called Hiram—familiarly known as Shorty about Eberly's Mills.

Q. 20. I call your attention to an article in the *Carlisle Mirror* of November 16, 1875, headed: "From Eberly's Mills, and signed "River Echo"; did you write it, and if so, please read it as part of your answer?

[*Same objection.*]

Ans. I did write it; it is as follows:

"FROM EBERLY'S MILLS:

"Axles: We have the pleasure of announcing to the wide world that "our Milltown (Eberly's Mills) has now the new axle factory established "in the old machine shop at this place by a company of four live and "energetic members, one of which is our friend, Wilson Bear, of Camp "Hill, as the general business manager, and M. N. Grove, of Harrisburg "as corresponding secretary. They make the Kline Conical Compen- "sating Axle, a new invention of Mr. Kline's of Camp Hill. We wish "them every success for we think it is a very good improvement in that "line.

"ELECTRIC CLOCK WITHOUT A BATTERY is being gotten up in our "town by Daniel Drawbaugh, to be exhibited at the Centennial next "fourth, it will be one of the things not dreamt of by every one and be "a credit to the nation, for its wonderful simple workings and great con- "venience.

"The pavements of Milltown look a good bit as if Pap had been away "from home a long time and no one paid any attention to their worn out "conditions; how things will be when Mr. Frost comes along and tight- "ens up the loose bricks and old boards etc. is a thing to be seen.

"The Cedar Spring U. S. S. at this place is about to close for the pre- "sent term under the superintendency of Mr. E. P. Gilbert, one of the "noble Sunday school workers. A Bible class is to be organized for the "winter to which all are invited and we feel some will attend.

"BOAT UPSET:

"On Saturday afternoon the 13th instant, Mr. H. K. Drawbaugh and "two young ladies desired a short trip on the flowing stream. Having "procured a small boat they embarked and gliding softly by (very "likely no danger apparent to molest their joy) and on water perhaps "30 feet deep, the boat upset and left the three occupants struggling for "shore, which they made only by the gentleman's skill. How they

"escaped drowning is really strange as there is a very rough bank on "one side and wood and brush border on the other.

"Gone to their Happy Hunting Ground. Three young men left our "town a few days ago for the woods somewhere about Shippensburg, "where they expect to spend the winter, feeding on corn cakes and rac- "coon soup. They are a jolly set of boys and will make things lively "in the woods. They wear white clothes and if we don't hear of spooks "before spring it will be remarkably strange, for out they will be at "night, and how ghostly a white object looks in the dark. Don't you "see one, Joe?

RIVER ECHO.

Q. 21. I call your attention to an article in the *Carlisle Mirror* for October 27, 1876, entitled "From Eberly's Mills," and signed "R. E."; did you write it; and if so, please read it as part of your answer?

[*Same objection.*]

Ans. Yes, sir; it is as follows:

"FROM EBERLY'S MILLS.

"Mr. Editor: Will you please enlighten us on this point: if A's "chicken gets into B's hog-pen and gets torn up, has A any right to "close the hog-pen so tight that his other chickens cannot get in, with- "out first having an agreement in the matter?

"'There shall not one stone be left upon another.' This appears to "have come to pass, for since Mr. Leonard sold the mill property to "Messrs. Dellinger & May, the old stone barn has been sold to Geo. "Free, of White Hill, who is taking it away. This barn has been built "about eighty years; so says old grandfather Drawbaugh, father of J. "B. Drawbaugh, Esq., of this place, who says he saw it built, and now "sees it being taken down. Last week Mr. Samuel Hertzler, our wine- "maker, lost two of his best cows. They were sick only twenty-four "hours. All medicines failed to do any good.

"Several very fine hogs have died in Milltown this fall, and some are "sick. Quite a number of pigs kicked the trough and then quit eating.

"RUN-OFF:

"Mr. Horst, who is living at Hake's mill, was in the neighborhood of "White Hill Station, on Saturday, while the show was passing that "point, and his horse, frightening at the elephant, ran off, smashing the "wagon.

"FATAL FALL:

"A man by the name of Shaffer, residing near Miller's Mill, York "county, was picking apples for a neighbor recently, and while at the "top of the tree, with a bag full of apples, rested his weight upon a "dead limb, which broke and threw him to the ground. He lived about "two hours.

"WHAT IS TRESPASSING?

"Very often see along the road: 'Notice To Trespassers,' where it has

"been customary for years for persons to walk over the ground, never "thinking of being trespassers, and I have often thought that as nothing "is said of the way in which they are forbidden to trespass. A person "might be made to pay a fine for an offence of which they are intention- "ally innocent. Parties who put up such notices should mention the "particular things they object to, and let the people know what they "mean, as ignorance excuses no one.

"The C. V. R. R. Co. have put a ticket office at White Hill Station "and otherwise improved the house, such as putting in windows, a stove, "etc., which is very much appreciated by those who are obliged to wait "on the trains at that place.

"Corn-huskers do not brag this fall, as they only get 2 and 2½ cents "per shock. They think at that price it does not pay to do any extra "blowing.

R. E.

Q. 22. Did you, while living at Eberly's Mills, write any items of local news, from there, for either of the Harrisburg newspapers, and if so which papers, and give me some idea of how many articles you wrote?

[*Same objection.*]

Ans. I am not positive that I wrote any articles, for any of the Harrisburg papers, but think I wrote one for the Telegraph, but I have no recollection that it ever was published.

Recess for lunch until 2.30, P. M.

FEBRUARY 17, 1883, 2.30 P. M.

Examination resumed pursuant to adjournment.

Present, same counsel:

Examination of Ephraim R. Holsinger by Mr. Storrow, continued:

Q. 23. What was that article for the Telegraph about?

[*Same objection.*]

Ans. If I had written an article, which I think I did, it was in regard to Mr. Leonard selling the mill to Dellinger and May.

Q. 24. I call your attention to your deposition in the defendants, record, pages 376, 381 and 389—if you wish to make any explanation, or modification of said deposition, please to do so.

Ans. There is an error here, I think. In Answer 4, I think September 7 should be the 13th; I find no other change.

After the question was asked, the witness took his former deposition and read it through.

Cross-examined by Mr. Hill:

Cross-Q. 25. You have stated in one of your answers to-day that in the fall of 1876, shortly before you moved away from Eberly's Mills you were owing Mr. Drawbaugh something which you paid by furnishing him some paper and doing some printing for him; do you remember how much the balance was that you owed Mr. Drawbaugh, and paid in that way?

Ans. Exactly I do not, but I think it was about two dollars and a half.

Cross-Q. 26. At one time while you lived there Mr. Drawbaugh got you to make a coffin for the burial of an infant, did he not?

[*Objected to as new matter.*]

Ans. Yes, sir.

Cross-Q. 27. Do you remember what you charged him for that work?

Ans. I remember of telling Dan that I would not charge him anything, but he insisted on giving me something, but what that was I do not recollect.

Cross-Q. 28. Do you remember whether you did any other work for him besides that and the printing, while you lived there?

[*Same objection.*]

Ans. I do not remember.

Cross-Q. 29. When you got the fifteen dollars from Henry S. Rupp or arranged to get it, did Mr. Drawbaugh accompany you to Mr. Rupp's place and introduce you to him or recommend you to him?

Ans. Whether Mr. Drawbaugh accompanied me to Mr. Rupp's at the time I got the fifteen dollars I do not remember, but I remember of Mr. Drawbaugh being with me at Rupp's place and said to Mr. Rupp that he, Drawbaugh, would furnish me some money if Mr. Rupp would.

Cross-Q. 30. You repaid Mr. Rupp, and Mr. Drawbaugh I suppose, by doing work for them, did you?

Ans. Yes, sir.

Cross-Q. 31. When did you come down here to give this deposition, and at whose request?

Ans. On Wednesday of this week—I think it was about one o'clock in the afternoon—William Barkla, master machinist of the Huntingdon and Broad Top railroad shops, at Saxton, accompanied by Mr. John Malloy, of Saxton, came into my office and read a paper to me that I was to appear here, naming this hotel, and giving the number of the

room—by Mr. Storrow, I think. I was to appear on Thursday morning, at nine o'clock, I think; I didn't see the paper myself; I only heard it read; it took me by surprise, as my family were sick, and I was thinking of the means of getting here; I don't remember about the details.

Cross-Q. 32. Did you get here by Thursday morning at nine o'clock?

Ans. I arrived here at, I think, 2.35, A. M., Thursday morning.

Cross-Q. 33. That was day before yesterday, was it not?

Ans. Yes, sir.

Cross-Q. 34. Did you report to Mr. Storrow that morning?

Ans. Yes, sir.

Cross-Q. 35. Have you been here ever since?

Ans. No, sir.

Cross-Q. 36. Where have you been in the meantime?

Ans. On Thursday, at 11.05, I left the Pennsylvania depot, at Philadelphia, and arrived at home at 7.10, P. M. I was at home that night. On Friday, at 11.58, A. M., I left home, and arrived here about 8 o'clock, P. M.

Cross-Q. 37. What did you go home for?

Ans. To see if I had any printing that I had done for Dan Drawbaugh while I lived at Eberly's Mills.

Cross-Q. 38. Did you go at Mr. Storrow's request?

Ans. Yes, sir.

Cross-Q. 39. And when you arrived here on Friday evening about 8 o'clock, you reported again to Mr. Storrow, did you?

Ans. Yes, sir.

Examination taken, reduced to writing, and by the witness affirmed and subscribed to before me, this 17th day of February, 1883.

FRED. M. OTT,
Examiner.

EPHRAIM R. HOLSINGER.

Adjourned for the purpose of taking the deposition of Professor Bell, at Washington, D. C.

HOTEL LAFAYETTE, PHILADELPHIA,
MONDAY, *March* 19, 1883, 7.30, P. M.

Examination resumed pursuant to adjournment.

Present, Mr. Storrow for complainants, and Mr. Hill for respondents.

[*Complainants' counsel produces a certified copy of the deposition of Samuel F. Hauck, in the faucet interference case, and calls attention to the fact, that in the cross-interrogatory therein, numbered* 19, *and printed on page* 1162, *of defendants' record, the word there printed "invention" should be "inventions" in the plural.*

Objected to by Mr. Hill as irrelevant, immaterial and incompetent].

JOSEPH L. WEAVER, *being produced, sworn and examined, saith:*

Examined by Mr. Storrow:

My age is twenty-five; residence, 222 Boas street, Harrisburg, Penna.; occupation, clerking for Nash and Bro. in the agricultural implement business.

Q. 1. Are you a brother of Miss Weaver, whose deposition is printed on page 373 of complainants' record?

Ans. Yes, sir.

Q. 2. I asked you to search the newspapers of Carlisle, Cumberland county, and to copy all articles referring to Daniel Drawbaugh, which appeared therein during the years 1875, '6, '7, and 8. Did you do so, and what are the names of the papers you so searched?

[*Objected to as incompetent and immaterial.*]

Ans. Carlisle Mirror, Carlisle Herald, Valley Sentinel, and Carlisle Volunteer; I copied all the articles that referred to him.

Q. 3. I also asked you to search the Carlisle Mirror, and to copy therefrom all the articles signed "River Echo," or "R. E.", from the time that paper began to be published, February, 1875, to the end of 1876. Did you do so?

[*Same objection.*]

Ans. I did.

Q. 4. I also asked you to search the Mechanicsburg papers, and to copy therefrom all articles referring to Daniel Drawbaugh which appeared therein during the years 1874, '5, '6, '7, '8; did you do so, and what papers did you search?

[*Same objection.*]

Ans. I searched the Independent Journal, Saturday Evening Journal beginning May 5, 1877—few numbers of that paper were missing—Semi-Weekly Ledger, a small quarto four-page paper, the file of which was incomplete.

Q. 5. I also asked you to copy a few other articles in Carlisle and Mechanicsburg papers, which I pointed out to you specially; did you do so?

[*Same objection.*]

Ans. I did.

Q. 6. Will you please produce the copies aforesaid of the articles which you found?

[*Articles objected to as irrelevant, immaterial, incompetent and not rebutting; and the copies made by this witness without the production of the files of the papers, objected to as incompetent and not proper evidence.*]

Ans. I produce them.

Q. 7. Some of them are not in your handwriting. Have you compared all of them with the original papers, and are they correct copies?

[*Same objection.*]

Ans. Yes, sir.

The copies produced are from the following papers:

The Valley Sentinel, Carlisle, January 22, 1875, "Explosion and Fire."

Carlisle Valley Sentinel, January 29, 1875, "Fire at Eberly's Mills."

Carlisle Mirror, November 5, 1875, article signed "River Echo."

Carlisle Mirror, November 12, 1875, article signed "River Echo."

Carlisle Mirror, November 16, 1875, article signed "River Echo."

Carlisle Mirror, October 27, 1876, article signed "R. E."

Carlisle Mirror, August 1, 1876, entitled "The Latest Wonder," referring to Professor Bell's telephone.

Carlisle Volunteer, February 21, 1878, "The Great Cumberland Valley Clock," referring to a magnetic clock invented and built by Mr. Daniel Drawbaugh.

Carlisle Herald, April 4, 1878, article entitled "New Cumberland Correspondence," referring to Drawbaugh's magnetic clock.

Mechanicsburg newspapers, as follows:

Saturday Evening Journal, March 30, 1878, "A Home-made Telephone."

Saturday Evening Journal, April 6, 1878, article entitled "Telephones," referring also to "a telephone" which Daniel Drawbaugh "is inventing."

Independent Journal, April 17, 1878, article entitled "Old Curiosity Shop," referring to the magnetic clock and telephones of Daniel Drawbaugh.

Independent Journal, May 8, 1878, article entitled "Another Wonderful Clock," referring to the exhibition of Drawbaugh's magnetic clock at Harrisburg.

Saturday Evening Journal, May 18, 1878, article beginning "Drawbaugh's Magnetic Clock," referring to its exhibition.

Independent Journal, November 20, 1878, "Magnetic Clock," stating that Mr. Jacob E. Shettel has presented a magnetic clock, "manufactured by Mr. Daniel Drawbaugh, Esq.," to St. John's Church

Saturday Evening Journal, October 20, 1877, article beginning "Professor Bell's Telephone."

Independent Journal, October 24, 1877, same article.

Saturday Evening Journal, June 29, 1878, article entitled "Microphone and Magnophone."

Independent Journal, July 24th, 1878, article entitled "More Microphone Experiments."

[*Said articles are put in evidence by Mr. Storrow. The above objections are repeated by Mr. Hill, and the contents of each and all the articles are further objected to as hearsay.*]

Q. 8. I also asked you to copy some articles from other newspapers referring to telephones, and not referring to Mr. Drawbaugh. Are these articles now produced, and which I will presently enumerate, correct copies from the several newspapers? The articles I refer to are as follows:

Baltimore American, February 28, 1877, entitled "Wonders of the Telephone," being the notice of a lecture by Elisha Gray, at McCormick Hall, Chicago, referring to Elisha Gray's musical telephone and Professor Bell's "speaking telegraph."

Baltimore American, November 2, 1877, article entitled "A Telephonic Experiment," describing the transmission of speech between Baltimore and Washington "with the Bell telephone."

Baltimore American, March 4, 1878, article entitled "The Telephone," giving the names of persons and firms in Baltimore using them.

Article from the Philadelphia Press, February 21, 1877, entitled "The Telephone," referring to Professor Bell's telephone.

Article from the Philadelphia Press, July 9, 1877, entitled "Telephones and their Different Uses," referring to telephones of Bell, Edison, and Gray.

Article from the Philadelphia Press of August 20, 1877, entitled "The Telephone in Practical Use."

Article from the Philadelphia Press, October 20, 1877, entitled "The Telephone," referring to Bell's telephone.

Article from the Philadelphia Press, April 3, 1878, entitled "Testing the Telephone," and referring to the transmission of speech between Philadelphia and New York by the Edison telephone.

Article from the Philadelphia Record, May 2, 1878, entitled "Talk at Long Range," referring to the Edison telephone.

Article from the Philadelphia Times, May 17, 1878, entitled "Telephones and Aeronautics at the Show," referring to Edison's, Bell's, Gray's, and Phelps' instruments in the "Permanent Exhibition" building, and the transmission of speech between that place and the office of the "Local Telegraph Company," on Third street.

Article from the Scientific American, July 28, 1877, entitled "A New Invention in Telephones," referring to Edison's Carbon telephone.

Ans. They are correct copies.

[*Said copies are put in evidence by Mr. Storrow. Objected to by Mr. Hill as irrelevant, immaterial, incompetent, not rebutting, and mere hearsay.*]

Q. 9. Mr. William H. Decker, a witness who was called for the defendants, testified, in his direct examination, page 1156, concerning the exhibition of the "Hazleton Clock," on Third street, near Walnut, Harrisburg; and stated that it was exhibited there in the summer of 1877. I asked you to search the three Harrisburg papers, to wit: The Patriot, the Independent, and the Telegraph, from the first of April, 1877, to the first of April, 1878, and to copy all the advertisements and notices of the exhibition of the Hazleton clock during that period; did you do so, and have you here the copies which you made or compared?

Ans. Yes, sir; I produce all.

[*Mr. Storrow puts in evidence an advertisement from the Harrisburg Patriot, December 25, 1877, and in each succeeding issue up to and including January 5, 1878, of the exhibition, at No. 34 North Third street, "Admisston ten cents; The Eighth Wonder of the World—The Strasburg Clock Outdone! The Wondrous Clock," &c.*

From the Harrisburg Patriot, December 31, 1877, an article entitled

"The Eighth Wonder," and describing the exhibition of "the wonderful clock built by Stephen D. Ingle, of Hazleton;" and also asks the examiner to note that the witness has produced notices of the exhibition from the following papers and none others:

Patriot, December 28, 1877; *December* 29, 1877; *January* 1, 1878; *January* 2, 1878; *January* 3, 1878; *January* 4, 1878; *January* 5, 1878; *and Harrisbury Telegraph, December* 29, 1877.

Objected to as incompetent, secondary and hearsay.]

Q. 10. No. 34 North Third street, Harrisburg, is near Walnut street; is it not?

Ans. Yes, sir.

Cross-examination waived by Mr. Hill.

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me, this 19th day of March, 1883.

FRED. M. OTT,
Examiner.

JOSEPH L. WEAVER.

[*Mr. Storrow puts in evidence copies of articles referring to Edison's Carbon telephone, from the following newspapers:*

Journal of the Telegraph, June 1, 1877, (*Scientific American supplement, August* 4, 1877,) "*Edison's Pressure Relay.*"

Sunday Trojan, Troy, New York, Sept. 2, 1877, "*The Edison Telephone.*"

Journal of the Telegraph, April 16, 1878, "*Edison's Carbon Telephone.*"

Philadelphia Inquirer, April 16, 1878, "*The Telephone.*"

Daily Graphic, April 17, 1878, "*The Telephone.*"

Washington Post and Union, April 19, 1878, "*Genius before Science.*"

New York Daily Tribune, April 20, 1878, "*Telephone and Phonograph.*"

Objected to by Mr. Hill as incompetent, secondary, and hearsay.]

MARCH 20, 1883, 10, A. M.

Examination resumed, pursuant to adjournment, before Joshua R. Morgan, Notary Public, by consent.

Present, Mr. Storrow for complainants, and Mr. Hill for respondents.

AMOS FROWNFELTER, *a witness, being produced, sworn, and examined, deposes and says:*

Examined by Mr. Storrow:

Q. 1. State your name, age, residence, and occupation.

Ans. I am forty-eight years old; am a farmer now; I live at Fairview township, York county.

Q. 2. Are you the same Amos Frownfelter who testified on behalf of the defendants, and whose deposition is printed on page 690 of defendants' record?

Ans. I am.

Q. 3. When and how long did you live at Eberly's Mills, Cumberland county, Pennsylvania?

Ans. April, 1871, to April, 1874.

Q. 4. Where had you lived before that?

Ans. Landisburg, Perry county.

Q. 5. Where did you move to after you left Eberly's Mills in the spring of 1874?

Ans. I moved on Mr. J. K. Heck's farm, about two miles above Fairview, Cumberland county, about four miles from Milltown.

Q. 6. How long did you live there, and where did you move to next?

Ans. I lived there th ee years, and moved where I live now.

Q. 7. Have you lived in the same place where you live now ever since the spring of 1877?

Ans. Yes, sir.

Q. 8. When you lived at Eberly's Mills, whom did you work for, and what house did you live in?

Ans. I worked for George B. Heck, and lived in his tenant house by the side of his house.

Q. 9. Was that tenant house that you lived in between George B. Heck's house and Fettrow's blacksmith-shop?

Ans. Yes, sir.

Q. 10. When you lived at Eberly's Mills, and worked for George B. Heck, did you have occasion to go to Daniel Drawshop's shop on any business specially; and, if so, what?

Ans. I went there occasionally on special business. We always ground our tools there, such as axes, scythes, and whatever other tools needed grinding.

Q. 11. Did George Heck have a grindstone of his own at his place?

Ans. No, sir.

Q. 12. Was he the owner of Drawbaugh's shop at that time?

Ans. Yes, sir; the shop belonged to the farm at that time.

Q. 13. Did you do a great deal of the grinding of the tools there yourself?

Ans. Yes, sir; I generally did it myself.

Q. 14. Did Daniel Drawbaugh ever show you any machines, which he called talking-machines, at his shop?

Ans. No, sir.

Q. 15. Did he ever before this controversy began tell you that he had any talking-machines at his shop?

Ans. No, sir; he never did.

Q. 16. Please look at the instruments now shown you marked "F," "B," "C," "C reproduced," "I," "A," "D," "E," and state whether you ever saw these or anything substantially like them at Mr. Drawbaugh's shop.

Ans. No, sir; I never seen any of them.

Q. 17. Look at the other instruments now shown you marked "G," "O," "L," "M," "N," "K," "H," "J," "P," and state whether you ever saw any of them at Mr. Drawbaugh's shop.

Ans. No; I never seen any of them.

Q. 18. From whom did you first hear that Mr. Drawbaugh was at work on a talking-machine?

[*Objected to as immaterial and incompetent.*]

Ans. I heard George Reed, my son-in-law, tell about—and this was the first I heard of any talking-machine.

Q. 19. Where did your son-in-law, George Reed, live when he first told you about Drawbaugh's working on a talking-machine?

[*Same objection.*]

Ans. He lived in the house with me—in the house where I live now.

Q. 20. How long ago did he come to live in that house with you?

[*Same objection.*]

Ans. Five years ago this spring, which would be the spring of 1878.

Q. 21. Was he working at Milltown at the time he told you?

[*Same objection.*]

Ans. Yes, sir.

Q. 22. Where did George Reed live before he came to live in the same house with you in the spring of '78?

Ans. He lived in New Kingston, about a dozen miles from Milltown.

Q. 23. When you lived at Eberly's Mills, were you in the habit of going to the stores in the evenings, particularly Saturday evenings?

[*Objected to as immaterial.*]

Ans. Yes; there wasn't many Saturday evenings that I wasn't there, and some through the week.

Q. 24. After you moved away from Eberly's Mills they made Kline's patent conical axles at Drawbaugh's shop; were you ever there while they were making those axles?

Ans. I recollect being there once while they were making those axles, but I don't know that I saw them working on them then.

Q. 25. Before you testified for the defendants, which was on the 25th day of July, 1881, had Mr. Drawbaugh been to see you, and asked you if you ever saw any talking-machines at his shop.

Ans. He was, but I told him that I never seen any.

Q. 26. Where was it that he came to see you then, and how did he come there?

[*Objected to as immaterial.*]

Ans. He came to my place there where I lived, to the barn where we were threshing; he came in a sleigh.

Q. 27. At that time when he came to you in the sleigh did he ask you anything about your hauling away the old saw-mill?

Ans. I don't recollect whether he did or not at that time; I rather think not at that time.

Q. 28. It was in hot summer weather when you testified at Harrisburg about the saw-mill; how long before you gave that testimony do you remember his talking to you about your hauling away the saw-mill?

[*Objected to as immaterial.*]

Ans. I don't recollect him saying anything about the saw-mill before that time that I testified at Harrisburg.

Q. 29. Whereabouts in Harrisburg did he first speak to you about the saw-mill on the day when you testified?

[*Same objection.*]

Ans. On Third street, in Mr. Jacobs' office.

Q. 30. Do you remember where it was that you first saw a speaking telephone?

Ans. Yes, sir; the first speaking telephone I saw was in New Cumberland, at Mr. Musser's office; I am not certain about his first name, but it was at the lumber-yard office.

Cross-examination waived.

Examination taken, reduced to writing, and by the witness sworn to before me this 20th day of March, 1883.

[SEAL.] JOSHUA R. MORGAN,
Notary Public.

His
AMOS X FROWNFELTER.
Mark.

WILLIAM FROWNFELTER, *a witness, produced, being affirmed, deposes and says:*

Q. 1. State your age, residence, and occupation.

Ans. Twenty-five years; Fairview township, York county, Pennsylvania; work on the farm; live in the same house with my father, Amos Frownfelter, who has just testified.

Q. 2. Did you live with your father, at Eberly's Mills, from the spring of 1871 to the spring of 1874, when he moved away?

Ans Well, I lived with him the first two years; you know I was hired; I was hired the last year.

Q. 3. Who were you hired to last year, and who did you live with then?

Ans. George Heck; I boarded at George Heck's house, and slept at my father's.

Q. 4. About how long ago did George Heck die?

Ans. I guess about nine years; he died in harvest time, about July, while I was hired there.

Q. 5. Did you move away from Milltown with your father when he moved away?

Ans. Yes, sir.

Q. 6. While you lived at Milltown, did you work for anybody, except while you were hired on the Heck farm, for the last year you worked there?

Ans. No, sir.

Q. 7. During these three years, while you lived at Milltown, did you use to go to Daniel Drawbaugh's shop?

Ans. Yes, sir.

Q. 8. How much did you go there during those three years?

Ans. Several times; I can't just tell how often.

Q. 9. Give me some idea of about how often—once a year, once a week, or how often?

Ans. Well, I suppose, on an average, once a week.

[*Objected to as mere guess-work, the witness having already testified that he did not know how often he had gone there.*]

Q. 10. When you would be there, did you always stay in one part of the shop, or were you at different times over pretty much the whole shop?

Ans. I was over—all through the shop, mostly.

Q. 11. Mr. Drawbaugh had a small room partitioned off in the second story that was sometimes called his office; were you ever in that room?

Ans. Yes, sir.

Q. 12. Would Mr. Drawbaugh from time to time show you his different inventions, and tell you about them?

Ans. Yes, sir.

Q. 13. Did he ever show you anything that he told you was a talking-machine when you lived at Milltown?

Ans. No, sir.

Q. 14. Look at the instruments I show you, marked "F," "B," "C reproduced," "C," "I," "A," "D," "E," and state whether you ever saw them, or anything like them, at Mr. Drawbaugh's shop before this suit began two or three years ago.

Ans. I have never seen anything like them.

Q. 15. Look at the instruments I now show you, marked "G," "L," "M," "N," "P," "Q," "H," "J," "K," and state whether you ever saw them, or anything like them, at Mr. Drawbaugh's shop, before this suit began, two or three years ago?

Ans. No, sir; I never did.

Q. 16. While you lived at Milltown, did you hear Mr. Drawbaugh, or any one else, say that Mr. Drawbaugh had a talking-machine or was at work on a talking-machine?

Ans. No. sir.

Q. 17. While you lived at Milltown, who kept store?

Ans. George Kissinger.

Q. 18. Were you in the habit of going to the store on Saturday evenings or other evenings while you lived at Milltown?

Ans. Yes, sir.

Q. 19. Were you intimate with George Kissinger's sons, and if so, which one particularly?

Ans. John was a particular friend.

Q. 20. Who did you first hear say that Mr. Drawbaugh was at work on a talking-machine?

Ans. George Reed.

Q. 21. Where did George Reed, your brother-in-law, live at that time?

Ans. He lived in the same house with us; the house where we live now.

Q. 22. Have you ever seen any of Mr. Drawbaugh's telephones at his shop; if so, when?

Ans. I saw some there last fall.

Q. 23. When you saw them there last fall did Mr. Drawbaugh say anything to you about his telephones?

Ans. Yes, sir.

Q. 24. Did he show you anything which he said were copies of his old telephones?

Ans. Yes, sir; he showed me the glass and the can—tin can.

Q. 25. Did he ask you whether you had ever seen anything like them at his shop, or had ever seen any talking-machine at his shop?

Ans. Yes, sir.

Q. 26. What did you tell him?

Ans. I told him that I never did.

Cross-examination by Mr. Hill:

Cross-Q. 27. Who has talked to you on behalf of the Bell Telephone Company about testifying in this case?

Ans. John Comfort was talking to me about it.

Cross-Q. 28. How often has he talked to you about it?

Ans. Once; once he talked to me about it.

Cross-Q. 29. Only once?

Ans. Only once in particular.

Cross-Q. 30. Has he talked to you about it at other times not in particular?

Ans. No, sir; he did not.

Cross-Q. 31. Has he never been to see you about the case but once?

Ans. He was to see me twice, but the last time he was there I wasn't home.

Cross-Q. 32. When was it when he talked to you about the case in particular, and where was it?

Ans. Last Wednesday a week ago.

Cross-Q. 33. That would be March 7th, would it not?

Ans. That would be the 7th of March.

Cross-Q. 34. Had you never talked to him about the case before that day?

Ans. No, sir.

Cross-Q. 35. When did you first hear of Dan Drawbaugh's talking machine?

Ans. Three years ago last fall.

Cross-Q. 36. You mean the fall of 1879?

Ans. I suppose that was the time.

Cross-Q. 37. How often were you at Drawbaugh's shop between the 1st of April, 1874, and the 1st of September, 1880?

Ans. That I couldn't tell you, how often I was there.

Cross-Q. 38. Give us your best recollection and judgment about it?

Ans. Well, I have not been there so often in that time—the first three years I was a good ways off from his shop; I was four miles away from his shop.

Cross-Q. 39. During those first three years, how often were you at the shop on an average?

Ans. I don't suppose I was in the shop more than two or three times.

Cross-Q. 40. What did you go there for on these two or three times?

Ans. Well, I had no particular business there.

Cross-Q. 41. Did you see Dan Drawbaugh there when you went there on those two or three times?

Ans. I don't remember whether I did, or not.

Cross-Q. 42. From the 1st of April, 1877, to September, 1880, how far were you living from Drawbaugh's shop?

Ans. We call it two miles—pretty strong ones, though.

Cross-Q. 43. During that time, where were you living?

Ans. York county, Fairview township, with my father.

Cross-Q. 44. During that time, how often were you in Drawbaugh's shops on an average?

Ans. Well, I won't make it any more than what is; I would say about once every two months.

Cross-Q. 45. During that time, from April 1, 1877, to September, 1880, did you never see any talking-machines in Drawbaugh's shop?

Ans. No, sir; I never did.

Cross-Q. 46. When were you first hired out to George Heck? Was it April 1st, 1873?

Ans. Yes, sir.

Cross-Q. 47. From that time, April 1, 1873, to April 1, 1877, you were not in Drawbaugh's shop, were you?

Ans. No, sir.

Cross-Q. 48. Did you never see any talking-machine there in that time, from April 1, 1873, to April 1, 1877?

Ans. No, sir.

Cross-Q. 49. Are you entirely sure of that?

Ans. Not; I don't think I did.

Cross-Q. 50. Have you never told anybody that you saw Daniel Drawbaugh's talking-machine before you moved away from Milltown?

Ans. No, sir.

Cross-Q. 51. Are you sure of that?

Ans. Yes, sir.

Cross-Q. 52. Do you know a man named George H. Rupley?

Ans. Yes, sir.

Cross-Q. 53. Where does he live?

Ans. He lives with old Mr. Heck.

Cross-Q. 54. How long have you known him?

Ans. Have known him for nine years.

Cross-Q. 55. When and where did you first become acquainted with him?

Ans. I became acquainted with him when we moved from Milltown over to Mr. Heck's farm.

Cross-Q. 56. How soon after you moved to Mr. Heck's farm did you become acquainted with him?

Ans. Well, I suppose in a day or two; he lived on the farm when I went; I was right there on the farm with him.

Cross-Q. 57. Did you not tell him soon after you became acquainted with him that you had seen Daniel Drawbaugh's talking-machine?

Ans. Well, he says so, but I never told him anything about—I did not know there was such a thing at that time.

Cross-Q. 58. Did you not tell him soon after you became acquainted with him that you had seen Daniel Drawbaugh's talking-machine—that you had seen it strung along a fence, and had heard somebody talking through it?

Ans. No, sir.

Cross-Q. 59. Did you not tell him that in substance?

Ans. No, sir.

Cross-Q. 60. How old were you when you were first hired to George Heck?

Ans. I suppose I was about from fifteen to sixteen then.

Cross-Q. 61. Name all the machines of any kind that you ever saw at Mr. Drawbaugh's shop before you were hired to Mr. Heck.

Ans. Well, I seen rams, molasses faucets, weather-gauge, and some perpetual motion work I seen there.

Cross-Q. 62. Is that all that you can remember seeing there before you were hired to Mr. Heck?

Ans. That is all, with the exception of that old clock standing there.

Cross-Q. 63. What old clock?

Ans. Well, it was an old Dutch clock I suppose it was.

Cross-Q. 64. Describe the perpetual motion works you saw there.

Ans. I can't tell you much about the perpetual motion work; there was a pendulum moving backwards and forwards under a glass.

Cross-Q. 65. I asked you a little while ago in the 57th, 58th, and 59th questions whether you ever told George H. Rupley, soon after you became acquainted with him, about your having seen Daniel Drawbaugh's talking-machine—having seen it strung along the fence, and having heard somebody talking through it; did you never at any time tell George H. Rupley that you had seen Drawbaugh's talking-machine, had seen it strung along the fence, and had heard somebody talking through it, or words to that effect?

Ans. No, sir; I never did.

Redirect examination.

Q. Q. 66. George H. Rupley works in Drawbaugh's shop now, doesn't he?

Ans. No, sir.

Q. Q. 67. Has he been working there lately?

Ans. He worked there some two years ago, I suppose. They were making faucets there at that time for Chellis.

Examination taken, reduced to writing, and by the witness affirmed and subscribed to before me this 20th day of March, A. D. 1883.

WILL C. FROWNFELTER.

JOSHUA R. MORGAN,
[SEAL.] *Notary Public.*

Adjourned for lunch.

March 20th, 1883, 3 *o'clock*, P. M.

Examination resumed pursuant to adjournment.

Present same counsel as before.

JACOB NEIDIG, *being produced and sworn, deposes and says:*

Q. 1. Where did you live from the spring of 1870 to the spring of 1877?

Ans. At the Lake Spring Farm.

Q. 2. How far from Eberly's Mills was that?

Ans. We always called it a mile from our place; it might be a little further I guess.

Q. 3. Are you the son of Mr. Henry Neidig?

Ans. Yes, sir.

Q. 4. Did you live with your father from the spring of '70 to the spring of '77?

Ans. I did a greater part of the time.

Q. 5. Just state what business you had, during that time, that occupied you away from your father's farm, during any part of that time?

Ans. Well, I was in Harrisburg, about three months, clerking in a carpet store; that was my first time I was away from him between '70 and '77; that was the first summer after we quit farming. We farmed three years before we quit. The next was I worked for a farmer that was farming my father's farm; his name was William Beck; I lived in my father's house then; the next was the harness business, learning my trade; it was at Camp Hill, when I started at my trade, and from there I moved to Shiremanstown; I worked there two winters and one summer in between; we moved to Lake Spring in 1870, and farmed three years, and the next fall a year, I began my trade.

Q. 6. While you carried on your trade at Camp Hill and Shiremanstown, where did you live?

Ans. I lived in my grandfather's house, on the same farm as my father's, right across the road.

Q. 7. Then, if I understand your testimony, you lived on the Lake Spring farm, from the spring of 1870 to the spring of 1877, except during some three months in the summer of 1873, when you lived in Harrisburg; is that a fact?

Ans. I did.

Q. 8. Before you began to learn your trade did you work for any farmers in the neighborhood besides Mr. Beck?

Ans. I did.

Q. 9. Who?

Ans. Mr. Henry Zimmerman and Mr. Jonathan Fry.

Q. 10. Is that the Mr. Zimmerman who lived between White Hill station and George W. Mumper's farm?

Ans. It is.

Q. 11. How long before you began your trade did you work for him?

Ans. It was the second year after we quit farming.

Q. 12. What was the business you carried on at Camp Hill and Shiremanstown?

Ans. Harness making.

Q. 13. Who owned the business you carried on there; who supplied the money to carry it on?

Ans. My father.

Q. 14. Had he owned the business before, or did he buy it for you?

Ans. He bought it for me.

Q. 15. Did your father put in one of Drawbaugh's rams when you lived at the Lake Spring farm, and if so, about how long after you moved there was it that the ram was put in?

Ans. He did, the next year afterwards.

Q. 16. Did he put in a steamer while you lived there, and if so, how long after you went there did he put that in?

Ans. He did, the next year after.

Q. 17. Between the time you moved to the Lake Spring farm, in the spring of 1870, and the fall of 1874, when you began business at Camp Hill and Shiremanstown, how much did you go to Daniel Drawbaugh's shop?

Ans. Well, I was there a good many times in those years; can't say the exact number.

Q. 18. Was there any particular kind of business that took you there in those years, and if so, please state what it was?

Ans. Well, I have gone there to get pipe for both ram and steamer, and have gone back with pipe to have it cut and fit; I have been there for stop-cocks, and I have been there to have the ram repaired, and I have been there to have the reaper repaired—a part of the reaper, rather; well, I went there once for carpet-rag loopers—it was more than once, for that matter; I have been there to borrow gas-tongs, to screw and unscrew steam and water-pipes; I have been there just to look around on no business in particular.

Q. 19. During the time you carried on business at Camp Hill and Shiremanstown, from the fall of 1874 to the spring of 1876, were you at Drawbaugh's shop; and if so, how much?

Ans. I was there; I wasn't there as often as I was before.

Q. 20. From the time you quit working at Shiremanstown in the spring or summer of 1876, and the time you moved to Harrisburg, in the spring of 1877, were you at Drawbaugh's shop any; and if so, how much?

Ans. I was there but seldom in that year I know.

Q. 21. Since you moved away from Harrisburg, in the spring of 1877, have you been in Drawbaugh's shop; and if so, how much?

Ans. Not *in* the shop that I remember of. I have been *to* the shop on my way to the creek to go a swimming.

Q. 22. I observe that I forgot to ask you your age, present residence, and occupation, so please give them.

Ans. I reside at Harrisburg, following the notion business—keep store. I was twenty-six last December.

Q. 23. As you would be at Drawbaugh's shop from time to time, would he show you and explain to you the various inventions he had made, and contrivances he had got up?

[*Objected to as leading.*]

Ans. He did.

Q. 24. Was he free and ready to do so, or did he seem averse to doing so?

Ans. He seemed to be perfectly willing.

Q. 25. Please mention some of the inventions you saw there, or that he showed to you, and explained to you.

Ans. Well, I saw a boiler-feeder. I saw two stamp cancellers. I saw a nail-cutter in the basement. I saw a machine to mark cog-wheels. I saw an electric clock; one was run by wires that run out through the building into the ground, with plates attached—zinc, I think—the other was copper plate. I have seen different clocks there; one didn't have any case to it; one was a partly finished case when I saw it, with rather a fine set of works, that he claimed to be making for a Mr. Shapley, of Mechanicsburg. Well, the other one had a battery in a small room at the head of the stairs, and these wires connecting two clocks—one old clock in the room, and, I think, the works of a clock against the partition on the outside of this room. He drew my attention particularly to the extra fine clock he was making.

Q. 26. Do you remember his showing you the boiler-feeder or any explanation he made about it?

Ans. I do.

Q. 27. What was it?

Ans. Took it to his mouth, lined it, and blew into it and said he couldn't blow through it, but water would go through it; that is about all I have to say about that.

Q. 28. Did you ever see the stamp cancellers work, and what did they do to the stamps?

Ans. They both cut through the stamps—one cut a circle and the other cut straight across the stamp.

Q. 29. What kind of a machine was the machine to mark cog-wheels, and where did it stand?

Ans. It stood in that small room at the head of the stairs; it was made of brass; it had a flat wheel with circles and little holes in it for the regulating for cutting different numbers of cogs on different wheels.

Q. 30. You speak of an electric clock run by wires that went to copper and zinc plates in the ground; did that clock have a case when you saw it?

Ans. Not when I saw.

Q. 31. You speak of a clock with a partly finished case, and a rather fine set of works, which he was finishing for Mr. Shapley; was that clock running when you saw it, or what condition was it in?

Ans. I never saw that clock in motion; I saw it partly finished.

Q. 32. You speak of two clocks connected by wires; did you notice anything about those clocks keeping time alike, and if so, what?

Ans. I know they would tick at the same time, and Dan once told

me that he intended to put them along the railroad, and that they would keep the same time at one end of the road that they would at the other; that is, he intended to introduce them.

Q. 33. Did you ever see a gas governor there, to regulate gas-burners?

Ans. I did not.

Q. 34. Did you ever see a telegraph instrument there, for telegraphing?

Ans. I did.

Q. 35. Tell me what you remember about it, or of anything you did in connection with it.

Ans. I remember of copying the alphabet and carrying the same in my pocket for some time; it was an alphabet of dots and dashes; I remember of playing with the instrument, but can't exactly explain the way it was made, only it had a magnet and he used it by striking on it or pressing on it; that is about all I know of that.

Q. 36. Did you ever see a machine there for wrapping thread around wire to insulate it?

Ans. I do remember something of it, and do remember some wire which was wrapped by this machine.

Q. 37. Did you ever see a weather-gauge there, which he said he made?

Ans. I did.

Q. 38. Did you ever see any talking-machines there?

Ans. I did not.

Q. 39. Please look at the machines now shown you marked "F," "B," "C," "C reproduced," "I," "A," and state whether you ever saw those machines, or any like them, at Mr. Drawbaugh's shop.

Ans. I did not.

Q. 40. Look at the machines now shown you marked "D," "E," "G," "O," "L," "M," "N," "K," "H," "J," "P," and state whether you ever saw them, or any like them, at Mr. Drawbaugh's shop.

Ans. I did not.

Q. 41. Did you ever, before you moved away from the Lake Spring farm, in the spring of 1877, hear from Mr. Drawbaugh, or anyone else, that he had a talking-machine, or was working on a talking-machine?

Ans. I did not.

Q. 42. You know how free Mr. Drawbaugh was in showing to you, and describing to you, from time to time his various inventions; if, during all the time from 1870 to 1877, Mr. Drawbaugh had at his shop

talking-machines, by which conversation could be actually carried on along a wire from one part of the shop to another, and had been in the habit of showing them freely to persons who went there, and allowing them to talk through them, do you think that you would have known of them, and seen them?

[*Objected to as leading, hypothetical, argumentative, calling for mere opinion, and incompetent.*]

Ans. I think I would, if they had been there in those years that I visited the shop.

Q. 43. When did you first see any kind of a telephone?

Ans. The first one I remember seeing was in Harrisburg in 1877.

Q. 44. Was it a string telephone or an electric telephone?

Ans. It was a string telephone.

Q. 45. When and where did you first talk through one, or hear talk through one?

Ans. Well, I heard them speak through that one at Harrisburg, but I did not speak through it myself. I can't tell when I first spoke through a telephone, but, I think, it was at Baltimore; that was an electric telephone.

Adjourned until ten o'clock, March 21st, A. D. 1883.

MARCH 21, 1883, 10 o'clock, A. M.

Examination resumed, pursuant to adjournment.

Present, Mr. Storrow for complainants, and Mr. Hill for respondents.

[*Cross examination by Mr. Hill.*]

Cross-Q. 46. In what direction from Eberly's Mills is the Lake Spring farm?

Ans. In a westerly direction.

Cross-Q. 47. Does it lie between Eberly's Mills and Shiremanstown?

Ans. It does.

Cross-Q. 48. How far is it from Shiremanstown?

Ans. We always called it two miles.

Cross-Q. 49. Is Shiremanstown a very much larger village than Milltown?

Ans. It is larger, but not very much larger.

Cross-Q. 50. Do you know what its population is?

Ans. I do not.

Cross-Q. 51. What shops, stores, and places of business are there in Shiremanstown? Name them.

Ans. Shoe, blacksmith, tin, harness, and coach making shops; the stores are general stores, keeping all kinds of wares; there are three—two large and one small.

Cross-Q. 52. Is there a railroad station and telegraph office there?

Ans. There is a railroad station, but no telegraph office that I know of.

Cross-Q. 53. Did you work for William Beck in the summer of 1873?

Ans. I did, in the fall.

Cross-Q. 54. What time did you go to work for him, and what time did you quit?

Ans I worked, off and on, from that time till we moved away.

Cross-Q. 55. From what time to what time?

Ans. Early in the fall, right after harvest time, when I began; I quit the next fall, shortly before the fall election.

[*It is stated that the fall elections were then held in October.*]

Cross-Q. 56. Then, if I understand you, you commenced to work for William Beck early in the fall of 1873, and worked for him, off and on, until about the time of the State elections in October, 1874, during which period he was farming your father's farm, to wit: The Lake Spring farm; am I correct?

Ans. I believe you are.

Cross-Q. 57. Before you went to work for William Beck, you were in the carpet store at Harrisburg, were you?

Ans. I might have done some little work for Beck before I went to work in the carpet store.

Cross-Q. 58. When did you go to work in the carpet store, and when did you quit?

Ans. Went there in the spring of 1873, and worked there about three months.

Cross-Q. 59. Whose carpet store was it; who was carrying on the business?

Ans. Doctor Patterson; I don't remember his first name.

Cross-Q. 60. Is he living? If so, where?

Ans. He is not living.

Cross-Q. 61. Who were employed with you in the carpet store while you were there?

Ans. His son James. There was another one there about one week.

Cross-Q. 62. Is his son James living? If so, where, and in what business?

Ans. I think he is living, but cannot tell where.

Cross-Q. 63. Where was that carpet store situated? What business is carried on there now, and by whom?

Ans. It was situated on Market street, on the south side, between Front street and Second street. It is now occupied by Mr. Yingst, who keeps a carpet store in one room, and Messrs. Goldsmith & Fry, furniture and upholstering, in the other.

Cross-Q. 64. Fix the time, as nearly as you can, when you began learning your trade of harness-making.

Ans. About election time—in the fall of '74.

Cross-Q. 65. With whom did you learn your trade?

Ans. With three different men, namely: Mr. Fought, I don't remember his first name; Benjamin Dull, and Mark Davis.

Cross-Q. 66. With which of them did you first work in learning your trade?

Ans. Mr. Fought.

Cross Q. 67. When did you quit working with him?

Ans. The next spring, about either March or April.

Cross-Q. 68. You mean the spring of 1875?

Ans. Yes.

Cross-Q. 69. Where was Mr. Fought's shop in which he worked?

Ans. It wasn't Mr. Fought's shop.

Cross-Q. 70. State whose shop it was, and where it was.

Ans. It was my father's shop, situated in Shiremanstown.

Cross-Q. 71. After you quit working for Mr. Fought, did you next work for Mr. Dull or Mr. Davis?

Ans. Mr. Dull.

Cross-Q. 72. When did you commence working for him, and when did you quit?

Ans. I commenced shortly after Mr. Fought quit, and worked several months.

Cross-Q. 73. State, as nearly as you can, when you quit.

Ans. It was in the fall, but I don't really remember the month.

Cross-Q. 74. The fall of 1875?

Ans. Yes, sir.

Cross-Q. 75. Was Mr. Dull's business carried on in the same shop in which Mr. Fought's business had been carried on, or in another shop?

Ans. He occupied the same shop.

Cross-Q. 76. When did you commence working for Mr. Davis?

Ans. That same fall—a little later.

Cross-Q. 77. When did you quit working for Mr. Davis?

Ans. The next spring—can't say what month.

Cross-Q. 78. That was the spring of 1876, was it not?

Ans. I believe it was.

Cross-Q. 79. Did Mr. Davis occupy the same shop that Mr. Dull and Mr. Fought had occupied?

Ans. Yes, sir.

Cross-Q. 80. Who worked with you in the shop, while you worked for Mr. Fought, and who, while you worked for Mr. Dull, and who while you worked for Mr. Davis?

Ans. No one in the shop. I said Mr. Fought had no shop; he really had a shop, while I worked with him, one week, at Camp Hill, there was four of us in the shop, they were Mr. Fought, myself, Silas Gleim, and a stranger. That was when I first began, in the fall of '74; it was my first work.

Cross-Q. 81. After you quit working for Mr. Davis in the spring of '76, how soon did you set up in the harness business yourself?

Ans. In the spring of '77, in Harrisburg.

Cross-Q. 82. At what place?

Ans. Broad street,—the corner of Broad and Margaretta streets.

Cross-Q. 83. How long did you carry on business there at that corner?

Ans. One year.

Cross-Q. 84. That brings us to the spring of 1878; what did you do then, and where?

Ans. Clerked for my father, at White Hall hotel, Market street, between Second and Third, south side, Harrisburg; he was the proprietor of the hotel.

Cross-Q. 85. How long did you clerk for him at that hotel?

Ans. From about the first of May, 1878, until the beginning of January, 1879.

Cross-Q. 86. What did you do then, and where?

Ans. Boarded at the same hotel until April, and then went to Baltimore.

Cross-Q. 87. How long did you stay in Baltimore; what were you doing, and for whom?

Ans. Stayed there about one week; went to Westminster, Carroll

county, Maryland, and stayed there two weeks; went back to Baltimore; stayed there about ten days; from there to Newark, New Jersey; stayed there from between two and three weeks; from there to New York city and back, at different times, as nearly as I can say, a week or ten days; then back to Baltimore; stayed in Baltimore until the fall of 1879; from there to Harrisburg; at Harrisburg, I clerked for my father, in the Jones house, until the spring of 1880, when I moved to where I now live, and set up the notion business for myself.

Cross-Q. 88. Where were you, and what were you doing, from the spring of 1876 to the spring of 1877, when you went to Harrisburg?

Ans. I worked home, on the farm, with my father.

Cross-Q. 89. I understood that your father quit farming in the spring of 1873; when did he commence to farm again, and how long did he continue after he so began?

Ans. He commenced again two years after, and continued two years.

Cross-Q. 90. When and how long did you work for Henry Zimmerman?

Ans. The summer of 1874, through harvest and haymaking, was about all the work I did for him.

Cross-Q. 91. When and how long did you work for Jonathan Fry?

Ans. The years 1873 and 1874, off and on.

Cross-Q. 92. How much did you work for him in all?

Ans. Can't say the number of days, but helped to thresh and husk corn.

Cross-Q. 93. You were about sixteen years old when your father quit farming, in 1873, were you not?

Ans. Yes, sir.

Cross-Q. 94. Did you go to school after that time?

Ans. I did, one winter.

Cross-Q. 95. What winter was that?

Ans. I think it was in the winter of 1873–4.

Cross-Q. 96. What school did you go to that winter, and who taught it?

Ans. Gorgas school-house; I think Dr. Nicholas was the teacher.

Cross-Q. 97. How long did you go to that school that winter?

Ans. Don't remember the time; left before the term was over. I don't think I began at the beginning of the school.

Cross-Q. 98. Why did you not begin at the beginning of the term, and why did you quit before the term was over?

Ans. I remember of doing some work for Mr. Beck after the beginning of the term. I don't remember why I quit before the close of the term.

Cross-Q. 99. Do you think you quit because you had work to do?

Ans. It must have been work, but I don't really remember what.

Cross-Q. 100. Did you go to school in the winter of 1872–3?

Ans. Yes, sir.

Cross-Q. 101. During the whole term?

Ans. No; not the whole term.

Cross-Q. 102. What school did you go to, and who taught it?

Ans. To the same school-house, taught by John Peckman and Christian Hess and this Doctor Nicholas.

Cross-Q. 103. How long did you go?

Ans. I went some each term from the fall of '70 till the time I quit going in '74.

Cross-Q. 104. When did the terms usually begin and end?

Ans. Began about October, and ended sometime in March.

Cross-Q. 105. Why didn't you go the whole term in '72–3?

Ans. I was kept home in the fall on account of work on the farm; and, I think, we had public sale of our stock in March, '73. Of course, I stayed home to get things ready for the sale.

Cross-Q. 106. Why didn't you go the whole term in '71–2?

Ans. Kept home in the fall on account of corn; quit in the spring on account of farm work.

Cross-Q. 107. Was that also the reason why you did not go the whole term in '70–1?

Ans. I believe it was.

Cross-Q. 108. Fix the time, as nearly as you can, when you were last inside of Daniel Drawbaugh's shop at Milltown?

Ans. As I was there but little in '76, I can't remember the time.

Cross-Q. 109. It was in the year 1876, was it?

Ans. In the beginning of the year.

Cross-Q. 110. What did you go there for on that occasion?

Ans. On no business.

Cross-Q. 111. How long were you in the shop at that time?

Ans. I can't say how long, but usually spent some time there.

[*The last clause of the answer, commencing with "but," is objected to by Mr. Hill as not responsive, and as incompetent.*]

Cross-Q. 112. Whom did you see there on that occasion?

Ans. I don't remember of seeing anyone in particular, except Mr. Drawbaugh, during that year.

[Mr. Hill says: "I am inquiring about that particular visit;" and the witness says: "I am speaking of that whole year."]

Cross-Q. 113. You must confine your answers to my questions. At that last visit, which you made to Drawbaugh's shop, in the beginning of the year 1876, you saw nobody there but Mr. Drawbaugh; is that a fact?

[*Question objected to for the reason that the witness states that he has been testifying about the whole year, and not about any particular visit.*]

Ans. I can't remember the last visit; neither can I remember of seeing any particular one there.

Cross-Q. 114. You have stated in answer 109 that the last time you were there was in the beginning of 1876; is that true that it was at that time when you were there last?

Ans. I don't remember of any visits after the fore part of the year.

Cross-Q. 115. You were then working for Mr. Davis, at Shiremanstown, were you not?

Ans. I was the first few months of 1876, until he quit. When you say working for Mr. Davis I wasn't working for him; he was working for my father, and I was working with him in the same shop learning my trade.

Cross-Q. 116. Do you remember the Centennial Exposition in Philadelphia, in 1876?

Ans. Yes, sir.

Cross-Q. 117. Where you ever in Drawbaugh's shop after the beginning of that exposition?

Ans. I don't remember of being there any time during that summer, fall or winter—of any particular time.

Cross-Q. 118. Was it at your last visit there, that you saw Mr. Drawbaugh working on the fine clock for Mr. Shapley; or was it at some previous visit?

Ans. I can't say what season of the year it was.

Cross-Q. 119. I did not ask you at which season of the year it was, but whether it was at your last visit, or at some visit prior to your last one?

Ans. I saw it there more than once.

Cross-Q. 120. Did you see it there at your last visit or not?

Ans. I cannot tell.

Cross-Q. 121. How nearly completed was that clock, when you last saw it?

Ans. I saw the works, and I believe they were completed; I saw the pendulum, and I believe some work on a case; that is all I can remember of. I am sure the clock wasn't altogether finished.

Cross Q. 122. Was that while you were still at work with Mr. Davis?

Ans. I really can't answer that.

Cross-Q. 123. When were you in Mr. Drawbaugh's shop for the first time in your life?

Ans. I haven't any recollection of being there before the year 1871.

Cross-Q. 124. What were you there for then?

Ans. I was there during that year to get pipe, to have pipes cut and fit for a ram that Mr. Drawbaugh furnished, and also pipes for a steamer later in the year.

Cross-Q. 125. What time in the year was your first visit there for the pipes for the ram?

Ans. It was between spring and fall, but can't say what month.

Cross-Q. 126. Did anybody go there with you; and if so, who?

Ans. I remember of George Rupp going along once to help to load pipe; that is all I can remember of anyone being with me.

Cross-Q. 127. What did you see there during that year, 1871?

Ans. I saw a nail-machine, some faucets lying around, saw his machinery, a little engine that Dan wanted to sell me; that is all I can remember now of seeing that year.

Cross-Q. 128. As you were then a boy between fourteen and fifteen years old, I suppose the engine was a toy engine; was it not?

Ans. No; it was a real engine; he told me it would run our grindstone at home.

Cross-Q. 129. What price did he ask for it?

Ans. Said he would put it in good running order, and sell it for fifty dollars, and some time afterwards offered it for less money.

Cross-Q. 130. When did you last see that engine there?

Ans. Saw it several times that winter, after we had our steamer in operation at home; can't remember of seeing it since.

Cross-Q. 131. What were you there several times that winter for, after you had your steamer in operation?

Ans. Can't remember any particular business, but it must have been something in connection with the steamer.

Cross-Q. 132. Do you remember any particular visit to Drawbaugh's in the year 1872?

Ans. Not any particular one, but have been there during that year.

Cross-Q. 133. Do you remember any particular visit to his shop in 1873?

Ans. I believe I was there in the summer of 1873, with our reaper; I am not positive as to the date.

Cross-Q. 134. If you were there with your reaper, it was in harvest time, was it not?

Ans. It was, or just before; might have been preparing for harvest.

Cross-Q. 135. Do you recollect anything particular about that visit?

Ans. I don't believe I got further than the first floor at that time.

Cross-Q. 136. Might not that visit have been in the summer of 1874 or 1875, when you got the reaper repaired?

Ans. As I said before I am not positive about the date.

Cross-Q. 137. Do you remember any particular visit to his shop in 1874?

Ans. I believe in the year 1874 was when I got the carpet rag loopers from Mr. Drawbaugh.

Cross-Q. 138. What time of the year was that?

Ans. It was during the winter time; it might have been the winter of 1873–4.

Cross-Q. 139. What did you see there in the shop when you got the carpet-rag loopers?

Ans. I believe I saw the stamp-cancellers that year, and the machine he made the loopers with.

Cross-Q. 140. Is that all you saw?

Ans. I saw more; I am not sure about it being the same year.

Cross-Q. 141. Now tell us all you saw at Drawbaugh's shop at the time when you got the carpet-rag loopers, and from that time back to your first visit there, but do not mention anything that you have no recollection of seeing until after you got the carpet-rag loopers.

Ans. Well, I saw his turning-lathes, benches, and tools that he worked with; saw the nail-cutter, some faucets, some patterns, small engine, some paintings; that is about all that I can remember of just now; I saw him do work.

Cross-Q. 142. You have no recollection of any other particular visit in 1874, after you got the carpet-rag loopers, have you?

Ans. I remember of going there after I got them—some few months

after—to pay Dan for what I had sold, and returned those I had on hand.

Cross-Q. 143. Is that the only other visit you remember in 1874?

Ans. I can't remember when I made my next visit after I settled for the loopers.

Cross-Q. 144. Do you remember any particular visit you made to Drawbaugh's shop in 1875?

Ans. I believe I went down with part of the ram in the summer of '75.

Cross-Q. 145. What did you see there then when you went with part of the ram?

Ans. Can't remember of anything I saw just at that time.

Cross-Q. 146. Were you in the upper part of the shop, or only on the lower floor at that time?

Ans. I was upstairs when Dan made a valve out of leather for the ram.

Cross-Q. 147. Do you remember any other particular visit to Drawbaugh's shop in 1875, except that one?

Ans. No, sir.

Recess until 3 o'clock, P. M.

MARCH 21, A. D. 1883, 3 o'clock, P. M.

Examination resumed, pursuant to adjournment.

Present, same counsel as before.

Cross-Q. 148. Name all the persons you saw working in Drawbaugh's shop from the time you first went there in 1871, to and including the time when you got the carpet-rag looper.

Ans. All that I saw were Hiram, George, and Daniel Drawbaugh.

Cross-Q. 149. Name all the persons that you saw working there, after the time when you first got the carpet-rag loopers.

Ans. Don't remember seeing any one but Dan himself.

Cross-Q. 150. When did you first see an electric clock of any kind in Mr. Drawbaugh's shop?

Ans. I am not sure as to the date, but think it was in '75.

Cross-Q. 151. What makes you think it was in '75?

Ans. Because I think it was but a year or so before we left that country.

Cross-Q. 152. Do you mean before you left for Harrisburg?

Ans. Yes, sir.

Cross-Q. 153. Do you remember the occasion when you first saw any electric clock there; do you remember the time of year, or how you happened to be there then?

Ans. I don't remember the time, nor of any business that took me there.

Cross-Q. 154. Which clock did you see at that time?

Ans. The first clock I saw was the frame of a clock—the works tacked up against the partition in the room that Dan. worked in at that time.

Cross-Q. 155. Was that the clock that had wires running out to the copper and zinc plates in the ground?

Ans. I don't remember whether it had wires running out to the ground, or whether it had a battery, but it had either one or the other.

Cross-Q. 156. It was not the clock that was connected to and run by another clock, was it?

Ans. I believe it was run from a larger clock in a smaller room.

Cross-Q. 157. How long after that was it before you saw the wires running out to copper and zinc plates in the ground?

Ans. That I can't say as to the time.

Cross-Q. 158. When you paid for the carpet-rag loopers, had you, up to that time, ever seen any electric clock in the shop?

Ans. I don't remember whether I had seen or not

Cross-Q. 159. Then you have no recollection of having seen any up to that time, nor until after that time, have you?

Ans. It is impossible for me to say whether I saw the clocks before, and how long, or after, and how long, as I can't say when I first saw the clocks.

Cross-Q. 160. When you got the carpet-rag loopers you got them to sell, did you not?

Ans. I did.

Cross-Q. 161. How many did you get to sell, and how many did you sell?

Ans. I can't say how many I got nor how many I sold, but I know I did not sell all I got.

Cross-Q. 162. Did you travel around with them peddling them out?

Ans. No, sir; only tried to sell them around home to some of my friends.

Cross-Q. 163. Name all the persons to whom you sold any.

Ans. It is impossible for me to do that.

Cross-Q. 164. Name anybody to whom you sold some.

Ans. Can't remember of anyone.

Cross-Q. 165. Do you know William Fettrow?

Ans. Yes, sir.

Cross-Q. 166. Did you ever see him in Mr. Drawbaugh's shop?

Ans. I think I saw him there.

Cross-Q. 167. How many times?

Ans. Can't remember how many times, or what times.

Cross-Q. 168. When was the last time you remember seeing George Drawbaugh there in the shop?

Ans. I think they were among my first visits to the shop.

Cross-Q. 169. What was he doing then?

Ans. He was doing some tinkering for himself, but what I can't say.

Cross-Q. 170. When was the last time you saw Harmon K. Drawbaugh there?

Ans. I am not able to say that either.

Cross-Q. 171. Was he at work there when you used to see him there?

Ans. I don't remember of seeing him do any work there for Dan.

Cross-Q. 172. Do you remember seeing him doing any work there for anybody?

Ans. I saw him floundering around there, but what he was doing I am unable to say.

Cross-Q. 173. If Daniel Drawbaugh had any electric clock there in the shop before the summer of 1875, he could not prove it by you, could he?

Ans. Not at this time.

Cross-Q. 174. Now, before you moved to Harrisburg in the spring of 1877, did you not see a talking-machine at Mr. Drawbaugh's shop, and see and hear others talking through it, and talk through it yourself?

Ans. I did not. My visits to his shop were few, if any, just before moving to Harrisburg.

Cross-Q. 175. How long before moving to Harrisburg were your visits to his shop few, if any?

Ans. Don't remember of any visits to his shop from early in the summer—year '76; there was no particular visits in that year, '76.

Cross-Q. 176. Did you not before the year '76 both talk through his

telephone, and see and hear others talking through it on the same occasion?

Ans. No, sir.

Cross-Q. 177. May you not have done it, and after the lapse of so long a time have forgotten all about it?

Ans. As I have remembered things of less importance, I feel sure I would have remembered that.

Cross-Q. 178. Who has been talking to you, on the part of the Bell Telephone Company, in regard to your recollection in this case?

Ans. Nothing of any consequence; Mr. Storrow and Mr. Comfort saw me twice; both visits were brief.

Examination taken, reduced to writing, and by the witness subscribed and sworn to before me, the 20th and 21st days of March, A. D. 1883.

JOSHUA R. MORGAN,
Notary Public.

JACOB NEIDIG.

JACOB D. RAFFENSBERGER, *being produced and affirmed, deposes and says:*

Q. 1. State your age, residence, and occupation.

Ans. I am nearly forty-six; I reside at Mechanicsburg, in this State, and am a dealer in musical instruments; that has been my occupation for twenty-five years, and I have lived in Mechanicsburg about the same time.

Q. 2. Do you know Samuel M. Hertzler, who lives at Eberly's Mills, and did you sell him a parlor organ a number of years ago?

Ans. I do; I did.

Q. 3. Was it sold on credit or for cash?

Ans. For cash.

Q. 4. Look at the check now shown you and state whether the indorsement on the back is your signature; whether that is the check that Mr. Hertzler paid you for that organ; and if so, read it as part of your answer?

Ans. Yes, sir; the indorsement is my signature; it is the check by which he paid me, and reads as follows:

No. . . . HARRISBURG, PA., *June* 16, 1875.

State Bank of Harrisburg, Pa.,

Pay to J. D. Raffensberger, or order, one hundred and fifty dollars.

$150. S. M. HERTZLER.

(Endorsements:)

I. D. RAFFENSBERGER.

Credit Second National Bank, Mechanicsburg, Pa.

A. KELLER, Cash."

Q. 5. Did Mr. Hertzler give you that check at or about the time you sold him the organ?

Ans. Yes.

Q. 6. Did you keep your account at the Second National Bank of Mechanicsburg at that time?

Ans. Yes.

Q. 7. Did you go to his house to deliver that organ yourself?

Ans. I did, sir.

Q. 8. Did you see any other organ there?

Ans. No, sir.

Q. 9. When he was trading with you for that organ, did he ask you to take an old one in part payment, or did he say or mention that he had had an old one before?

[*Objected to as hearsay.*]

Ans. He did not.

Q. 10. What make and style of organ was it?

Ans. It was Estey make, style 11.

Cross-examination waived.

Examination taken, reduced to writing, and by the witness affirmed to and subscribed before me, this 21st day of March, A D. 1883.

JOSHUA R. MORGAN,
Notary Public.

J. D. RAFFENSBERGER.

HENRY KINTZ, *being recalled and sworn, deposes and says:*

Q. 1. You have already testified in this case and given your deposition, which begins on page 1,185 of the complainants' printed record, have you not?

Ans. Yes.

Q. 2. In that deposition you referred to an account-book containing a record of lime sold by you from Mr. Eli Hake's kilns; have you that book now here present, and if so, will now please produce it for inspection?

Ans. I have it; I produce it.

Q. 3. Please point out the first entry therein in your handwriting, and the last therein in your handwriting, and give the dates of the two.

Ans. The first in my handwriting is dated April 9, 1870; the last in my handwriting, March 28, 1876.

Q. 4. Are all the entries between those two dates in the book in your handwriting?

Ans. Yes, sir.

Q. 5. Is there any entry or record therein of any sale to any man of the name of Nichols, or Nicholas, between the beginning of 1874 and March 28, 1876?

Ans. There is none that I can find.

Cross-examination by Mr. Hill:

Cross-Q. 6. When did you get this book, and from whom?

Ans. On yesterday, the 20th, from Eli Hake's son, at Eli Hake's house.

Cross-Q. 7. Did you tell him what you wanted it for?

Ans. I told his son.

Cross-Q. 8. What did you tell him?

Ans. I told him I wanted the lime-book to bring down here—Philadelphia.

Cross-Q. 9. Did you tell him you wanted to use it against Daniel Drawbaugh?

Ans. No, sir.

Cross-Q. 10. Did you tell him you wanted to use it for Daniel Drawbaugh?

Ans. No, sir.

Cross-Q. 11. Did he make any objection to your taking it, and bringing it down.

Ans. No, sir.

Cross-Q. 12. What is his name in full?

Ans. Jacob Hake.

Cross-Q. 13. Is this the book the charges were made in at the time the lime was sold?

Ans. Yes, sir.

Cross-Q. 14. Was all the lime that was sold and paid for at the time entered immediately in this book, or was there lime sold that was not entered in this book?

Ans. It was entered the same day.

Cross-Q. 15. Was it entered the same day whether it was paid for, or not.

Ans. Yes, sir.

Examination taken, reduced to writing, and by the witness sworn to and subscribed before me this 21st day of March, A. D. 1883.

JOSHUA R. MORGAN,
Notary Public.

HENRY KINTZ.

Adjourned until March 22, 1883, at ten o'clock, A. M.

MARCH 22, 1883, 10, A. M.

Examination resumed, pursuant to adjournment.

Present, Mr. Storrow, counsel for complainants, and Mr. Hill, counsel for respondents.

JESSE WAGNER, *being produced and affirmed, deposes and says:*

Q. 1. State your age, residence, and occupation.

Ans. Age, forty-eight years; residence, Marysville, Perry county, Pa.; I have different occupations; my regular occupation is mason and stone-cutter; sometimes do contract work.

Q. 3. How long have you lived at Marysville, and carried on that kind of business?

Ans. I lived there since 1866; that would make seventeen years, would it not?

Q. 3. Did you carry on that kind of business there all the time?

Ans. With the exception of one year I was working for the Philadelphia and Erie Railroad Company; all the rest of the time I carried on that occupation.

Q. 4. Do you know George W. Kissinger, who lived on a farm in Marysville, which he hired from Thomas Draper, and do you know his sons?

Ans. Yes, sir.

Q. 5. Did you do any grading or mason-work for the Northern Cen-

tral Railroad Company's coal shutes or coal-wharf in the early part of 1878?

Ans. Yes, sir.

Q. 6. Did George W. Kissinger and his son John do any work for you on that job?

Ans. They did.

Q. 7. Will you please produce your labor accounts for that job, and point out when each of them worked?

Ans. I produce them; the first is the account for December, 1877; neither of them are on that; the next is the account for January, 1878; it appears from that that George Kissinger worked with a horse and cart. He began on the 2d of January, 1878, and worked sixteen and six tenths days. John Kissinger began on the 5th of January, and worked sixteen and six tenths days during the same month. The account, for February, 1878, shows that George Kissinger, horse and cart, were credited thirty-four and eight tenths days in that month; I think that Mr. Kissinger had two carts running at that time. John Kissinger worked seventeen and four tenths days in the same month. The account for March, 1878, shows that George Kissinger, horse and cart, worked the first two days of the month with two carts; that he did not work again until the latter part of the month, making eleven days and one tenth during the month; John Kissinger worked the first two days of the month, and not afterwards. The account for April, 1878, shows that George Kissinger worked with one horse and cart, making seven days and five tenths during the month; the last day he worked was the 19th; all the carts stopped then; that was about the time I finished. I have here also a consolidated account, made up for the months of December, 1877, and January, February, and March, of 1878; this includes the whole of these accounts I have just referred to, and all the men whose names are in them; it states the total number of days each month, the amount earned by each during the whole four months, the amounts paid them at various times before the first of May, 1878, the amount paid in May, and the final balance due. The total amount earned by George Kissinger was one hunded and twenty-eight dollars and two cents. The total amount earned by John Kissinger was thirty-five dollars and ninety cents; of this ten dollars were paid him at various times before May 1st, leaving a balance due him May 1st of twenty-five dollars and ninety cents. The column headed "paid in May," has two entries against his name; one of them, on the regular line,

is $20, and the other, which is interlined right above it, is $5 90. The column headed "balance" has opposite his name "paid, $5 90."

Q. 8. Do you remember when you paid John Kissinger that final balance of $5 90?

Ans. It was just about the time the work was done; I took receipts but I haven't got them here.

Q. 9. Do you remember whether John Kissinger was going west just about the time you paid him the last payment?

[*Objected to as hearsay unless the witness has personal knowledge of his going west.*]

Ans. Yes, sir; he was.

Q. 10. Do you know of Mr. George Kissinger's having a ram at his place in Marysville, to throw water up to the house?

Ans. I do.

Q. 11. Did you do any work about that ram; and if so, what?

Ans. I did; I put a wall around it to protect it from the frost; it was set in a hole and I stoned up the sides of the hole.

Q. 12. How big was this hole that you stoned up?

Ans. It was about four feet square inside, and three feet high; that is, the wall was three feet.

Q. 13. When you began that stone work did the earth around the hole look freshly dug, or did it appear as if it had been lying for a year or more?

Ans. It looked as though the work was fresh, I would say.

Q. 14. After you got through your stone-work around the ram do you know whether the hole was covered up to keep the frost out; did you afterwards see it covered over?

Ans. I think it was; I wasn't at the place till the following spring of the year, and it was covered then, and I take it for granted it was covered immediately after the mason work was done.

[*The last part of the answer is objected to as mere opinion and incompetent.*]

Q. 15 Would it have been safe to leave the ram exposed to the weather all winter in the place where it was situated?

Ans. I should think not, from my limited knowledge of rams.

Q. 16. Had you known of Mr. Kissinger's having a ram there at his his house before that fall when you built that wall around it?

[*Complainants' counsel withdraws the question, and requests it struck out.*

Respondents' counsel requests that the question just struck out be printed with the record, because it was not struck out until he had expressed his intention of objecting to it, nor until the leading intimation in it had reached the witness.

Complainants' counsel says when he dictated the question to the examiner he forgot that the witness had not stated the date when he built the wall.]

Q. 17. If you have any entry or charge in your book, concerning the building of that wall, will you please produce your book, and point out and read the entry?

Ans. I do so; the entry is as follows:

"1878 George Kissinger,

November 6 half day at ram,	75
" 7, " "	75
	$1 50

Q. 18. Was that the time when you built that wall?

Ans. It was.

Q. 19. Is this entry in your handwriting?

Ans. Yes, sir.

Q. 20. Was it made at or about the time of its date?

Ans. Yes, sir; it was.

Q. 21. Had you known of Mr. Kissinger having a ram at his place, before that fall, when you built this wall?

Ans. No, sir.

Q. 22. Are the six labor accounts which you have referred to in your 7th answer, in your handwriting?

Ans. Yes, sir; they are.

Q. 23. Are these the accounts which you kept at the time, and by which you settled with your hands?

Ans. Yes, sir.

Cross-examination by Mr. Hill:

Cross-Q. 24. Will you allow me to have a copy of this consolidated account made by the examiner, and put in evidence?

Ans. I do.

(Respondents' counsel puts in evidence said copy, together with the indorsement in red thereon; same to be marked "Exhibit Wagner.")

Cross-Q. 25. In this book, from which you have copied the items of November 6th and 7th of 1878, about the ram, I find that the book com-

mences with entries dated January, 1875, followed in regular order by entries dated in each consecutive month in 1875; then in regular order by entries in each consecutive month of 1876, up to November 9th, 1876; then it jumps to entries in February, 1877; then to entries in November and December, 1878; then to entries in February, 1879; then to entries of September and October of some year not given; then to entries in March and April of 1881; then to entries in February, 1883; then to entries in December—the year not stated; then to entries in November, 1880; then to entries in 1878; then to entries in 1880; then to entries in 1882; then to entries in 1879; then to entries in 1876; then to entries in 1877 and 1878; then to entries in 1880, 1881, and 1882; then back to 1879 and 1880; then to 1879 and 1878; then to 1880; then to 1882; then back to 1878, and so on through the book; how happened these entries to be so mixed up?

[*Question objected to as an entire misrepresentation of the character and contents of the book, which, in a large part, appears to consist of separate accounts in the nature of ledger accounts and memoranda referring to different persons and different accounts on different pages, besides sundry miscellaneous matter.*]

Ans. Why, simply because I did not regard it as a regular account book, but more as a memoranda, and had the habit of making entries where I opened the book and found blank pages; just wherever I happened to open the book and found blank pages.

Cross-Q. 26. At the time when you walled up the enclosure for the ram, was the ram in and at work?

Ans. Yes, sir; it was.

Cross-Q. 27. It was already in when you began your work on November 6, was it not?

Ans. Yes, sir; it was.

Cross-Q. 28. At what time of the day did you commence the half-day work on November 6?

Ans. I think it was at one o'clock, P. M.—afternoon.

Cross-Q. 29. Was the half-day's work of November 7 done in the forenoon or afternoon?

Ans. I think it was done in the forenoon.

Cross-Q. 30. Did anybody assist you in that work on these two days? If so, who?

Ans. Yes, sir. If my memory serves me right, I think it was Frank Kissinger, George Kissinger's son.

Cross-Q. 31. Was there anybody else there, except yourself and Frank Kissinger, while you were doing that work?

Ans. Yes, sir.

Cross-Q. 32. Who was it?

Ans. Mr. George Kissinger was there when I commenced the work, and gave instructions how it was to be done, and was there occasionally while the work was going on until finished or completed.

Cross-Q. 33. Was anybody else there during that time?

Ans. I cannot remember of anybody else being there.

Cross-Q 34. While you were on that farm during November 6th and 7th, 1878, did you go up to Mr. George Kissinger's house?

Ans. Yes, sir; I did.

Cross-Q. 35. Did you see the tank or hogshead or other thing into which the ram delivered the water at Mr. Kissinger's house?

Ans. I did.

Cross-Q. 36. What sort of a thing was it?

Ans. I don't remember what the vessel was like. It was a tub or barrel or bucket or something of that kind; it was no permanent arrangement.

Cross-Q. 37. Was it located in the house or outside?

Ans. Outside.

Cross-Q. 38. Describe, as clearly as you can, the place where it was located, stating on what side of the house, and how near to the house it was.

Ans. It was located about twenty-five or thirty feet from the northwest corner of the house in a north-western direction.

Cross-Q. 39. Did it deliver the water from an iron pipe?

Ans. Yes, sir; it did.

Cross-Q. 40. Was the iron delivery pipe exposed or was it incased in any way?

Ans. It was exposed.

Cross-Q. 41. How high did it rise from the ground?

Ans. It rose up and bent over and down at the top; I would say it rose about three feet above the surface of the ground.

Cross-Q. 42. Was there any well about the premises?

Ans. No, sir.

Cross-Q. 43. In what direction did the house front?

Ans. Southward.

Cross-Q. 44. Was there a barn or stable or other out-buildings about the premises?

Ans. Yes, sir; there was a barn there and a sort of a spring-house in a dilapidated condition.

Cross-Q. 45. In what direction was the barn from the house, and how far?

Ans. It was about one hundred and twenty yards, I would think, in a northern direction.

Cross-Q. 46. Then the discharge pipe of the ram was located between the house and the barn, was it?

Ans. Yes, sir.

Cross-Q. 47. Was the ground open on that side of the house, or inclosed; and if inclosed, was the discharge pipe in the inclosure with the house?

Ans. The space between the house and barn is all open ground.

Cross-Q. 48. Was there an orchard on the place?

Ans. Yes, sir; there was.

Cross-Q. 49. In what direction from the house was the orchard, and how far?

Ans. About one hundred and fifty yards, in the north-western direction.

Cross-Q. 50. In what direction from Marysville is that house, and how far?

Ans. In an eastern direction, between one quarter and one half a mile, I would say.

Redirect examination by Mr. Storrow:

Q. Q. 51. The page from which you have read the entry about the ram, in your answer 17, is headed "George Kissinger," and contains nothing but an account of work done by you for him and by him for you in 1878 and 1879; is that the fact?

Ans. Yes, sir; it is.

Q. Q. 52. I judge from the soiled condition of the outside of that book that it is a memorandum-book which you have been carrying in your pocket for a long time; is that the fact?

Ans. Yes, sir.

Q. Q. 53. The first half of this book, running from January, 1875, to the latter part of 1876, is a diary stating the weather and your various occupations on every day, or nearly every day, during that time, is it not?

Ans. Yes, sir.

Examination taken, reduced to writing, and by the witness affirmed and subscribed before me, this 22d day of March, A. D. 1883.

JOSHUA R. MORGAN,
Notary Public.

JESSE WAGNER.

Adjourned until 3 o'clock, P. M.

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3 O'CLOCK, P. M.

Examination resumed, pursuant to adjournment.

Present, same counsel as before.

WILLIAM LEWIS, *being produced and affirmed, deposes and says:*

Q. 1. State your name, age, residence, and occupation.

Ans. William Lewis. I was born in '37; my age is 45. I live in Chester, Pennsylvania. At the present time I am a builder.

Q. 2. Where did you live in 1869?

Ans. In Newville, Cumberland county, Pennsylvania.

Q. 3. How long did you live there, and when did you leave there?

Ans. I lived there from '62 to '75; I left there in December, '75.

Q. 4. What was your occupation in 1869?

Ans. Well, I was following several. I had a factory, store—line of cars on the road.

Q. 5. Where did your cars run?

Ans. From Newville to Baltimore, Philadelphia, and New York.

Q. 6. Did your cars run through Bridgeport, Cumberland county?

Ans. Yes, sir; to and from.

Q. 7. Did you have to lay over or wait at Bridgeport any time?

Ans. Yes, sir; from ten o'clock, A. M., to four o'clock, P. M., going down on the Baltimore run.

Q. 8. Did you know the firm of Zacharias & Son, at Bridgeport, and were you in the habit of going to their warehouse there?

Ans. Yes, sir.

Q. 9. I show you a paper which purports to be an agreement of partnership, made January 26th, 1869, between Samuel Zacharias and Samuel M. Zacharias, of the first part, and Eli Grabill of Silver Spring; which purports to be signed by Samuel Zacharias, S. M. Zacharias, and

Elias Grabill; the signatures are witnessed by William Lewis; are you the William Lewis that witnessed that paper, and is that your signature?

Ans. Yes, sir; that is my signature.

Q. 10. Did you see those three persons sign that paper?

Ans. I did.

Q. 11. Where was it executed, and where did you witness it?

Ans. In their office.

Q. 12. Had you known this Samuel Zacharias, and his son Samuel M. Zacharias before that?

Ans. Yes, sir.

Q. 13. It appears from this agreement that Samuel Zacharias and Samuel M. Zacharias had been doing business as Zacharias and Son before they took Mr. Grabill in partnership; did you know of their doing business under that name before Mr. Grabill joined them?

A. I did.

Q. 14. Mr. Grabill is here recited as being of the township of Silver Spring; did you know of his moving down from Silver Spring, at about the time his partnership began?

A. I did.

Q. 15. Had Mr. Grabill been doing business as one of the firm with Zacharias before that?

A. No, sir.

Q. 16. I find in the newspaper called The Valley Democrat, published at Mechanicsburg, Cumberland county, Pa., February 17, 1869, an advertisement entitled a "List of Sales," and among them noticed, for March 18th, a sale by Eli Grabill; was that about the time he moved down and joined the firm?

A. Yes; he moved down just after the sale.

(*The plaintiffs request the examiner to make a copy of the articles of co-partnership referred to, and put the same in the notes, to be marked "Zacharias, Zacharias, Jr., and Grabill Co-partnership agreement."*)

Cross-examination waived by Mr. Hill.

Examination taken, reduced to writing, and by the witness affirmed to and subscribed before me, this 22d day of March, A. D. 1883.

WM. LEWIS.

JOSHUA R. MORGAN,
Notary Public.

Adjourned till March 23, A. D. 1883, at 10 o clock, A. M.

March 23, 10, A. M.

Examination resumed, pursuant to adjournment, before Fred. M. Ott, Examiner.

Present, same counsel.

ISAAC LLOYD, *being produced, sworn, and examined, saith:*

Examined by Mr. Storrow:

My age is fifty years; residence, 1008 Cowden street, Harrisburg; occupation, teacher.

Q. 1. How long have you lived in Harrisburg, and how long have you been a teacher there?

Ans. I have lived in Harrisburg, as nearly as I can remember, about twenty-four years, and have been a teacher there for twenty-five years, as near as I can remember.

Q. 2. Have you ever held any public office in Harrisburg, and if so, what and when?

Ans. I have been alderman from the spring of 1875 to 1880, a term of five years.

Q. 3. Do you know Daniel Drawbaugh, of Eberly's Mills, and how long have you known him?

Ans. I do know him, and have known him for, as near as I can tell, twenty-six or seven years. That is not my time of intimacy with him, but I have known him that long.

Q. 4. When did you first visit him at Eberly's Mills, and what took you there on that occasion?

Ans. As nearly as I can tell, between 1866 and 1867. I went there to make a contract with him to make a machine to cut out pencil erasers.

Q. 5. What led you to go to him for that purpose, and who went with you on that occasion?

Ans. The suggestion was made by Mr. William P. Patton, of Harrisburg, the patentee of this eraser, and from whom we bought the patent, that Mr. Drawbaugh would be the man to make it, as he was used to doing that kind of work, or rather that he did that kind of work for him. Theophilus Weaver went with me on that occasion.

Q. 6. Did Mr. Weaver have any interest in the matter?

Ans. He did; he was an equal partner with me at that time in the eraser.

Q. 7. Did Mr. Drawbaugh agree to get up the machine for you, or did he get it up for you?

[*Objected to as immaterial.*]

Ans. To the best of my recollection, he did not consent to get up the machine. He did not get it up.

Q. 8. Did you ever go to his shop again with reference to any machine for stamping out your eraser plates; and, if so, who went with you?

Ans. Yes, sir; I did, accompanied by Mr. W. W. Wagner, grocer.

Q. 9. What led Mr. Wagner to go there?

Ans. The right—Mr. Weaver undertook to make the machine and failed, and we both sold out our rights to Mr. Wagner, who purchased the machine from us, and sent it to Milltown, to Mr. Drawbaugh's shop, as near as I can remember, on a market wagon. The machine was taken there for Dan to make such alterations as would make the machine do the work. This led to Mr. Wagner and myself going there.

Q. 10. At the time of these visits with Mr. Weaver and Mr. Wagner, whereabouts in Milltown was Mr. Drawbaugh's shop?

Ans. It was in the basement of his house, as near as I can tell. I think he lived above his shop.

Q. 11. Was his house the red house right back of the grist-mill, at that time?

Ans. I think it was, but I didn't take notice of the color of the house, whether it was all red or not.

Q. 12. If he exhibited to you or called your attention to any of his inventions, or machines he had constructed, at either of those visits, please state what they were.

Ans. He exhibited to Mr. Weaver and myself, a rotary pump, placed at the fore-bay or race of the mill. He attached a hose to his rotary pump, and got Mr. Weaver to stand on the hose, in order to show its force in throwing water. I also saw a small stationary engine, constructed by Mr. Drawbaugh, with which, I think, he said he ran a grind-stone, at some time or other.

Q. 13. It has appeared that in the year 1867 a concern, called sometimes the Drawbaugh Pump Company, and subsequently the Drawbaugh Manufacturing Company, was got up for the purpose of manufacturing his rotary measuring faucet and rotary pumps among other things, and that they took for that purpose a building formerly occupied for a clover-mill, where Cedar run empties into Yellow Breeches creek, just below the grist-mill at Milltown, and that Mr. Drawbaugh in that year moved his private tools there, and made that his workshop; were you in that lower shop while that company was actively carrying on the manufacture of faucets or pumps?

Ans. To the best of my knowledge, I was not.

Q. 14. Have you been in that shop, and seen Mr. Drawbaugh there since the time when that company ceased its active operations?

Ans. Yes, sir.

Q. 15. Has Mr. Drawbaugh, from time to time, when you have been in that shop, showed to you, called to your attention, and mentioned to you various of his inventions?

[*Objected to as leading and assuming.*]

Ans. He has shown me, and mentioned to me, various inventions that he had there.

Q. 16. Please mention the inventions or devices of his getting up which he has mentioned to you, or shown to you, at his shop, omitting the clocks, which I will inquire about in a separate question.

Ans. I saw a self-feeding attachment for a nail-machine. He also showed me a dial telegraph; an attachment to a meter to regulate the flow of gas; an appliance for ringing hotel bells. He showed me a patent canceller for cancelling postage stamps. I also saw a hydraulic ram; a machine for making paper bags; a machine for insulating wire; an attachment for a lathe to cut gearing.

Q. 17. Did he operate the dial telegraph for you?

[*Objected to as immaterial.*]

Ans. He did; yes, sir.

Q. 18. Did the apparatus for ringing bells employ electricity, or not?

Ans. To the best of my knowledge, it did.

Q. 19. What kind of an effect did the stamp canceller have on the stamp when it was operated, and did you see it operated?

Ans. I saw it operated. It mutilated the stamp. By pressing the top, it operated a knife with teeth like saw teeth. This was drawn over the stamp horizontally, mutilating it.

Q. 20. Did you ever see more than one stamp canceller there?

Ans. Not at his place.

Q. 21. Did you ever see anywhere else another one of his construction?

(*Objected to as immaterial.*)

Ans. I think I did; I couldn't say whether it was another one or not, but I saw it at another time.

Q. 22. Where, and in whose possession?

(*Same objection.*)

Ans. I saw this one on the street, in the city of Harrisburg, in the pos-

session of Mr. Drawbaugh; or, rather, I should say, along the railroad, between streets; I think, between Chestnut and Market streets, or along there. I could not fix that definitely; it was some place along the railroad.

Q. 23. How elaborately finished was the paper-bag machine that you saw?

(*Same objection.*)

Ans. To the best of my knowledge, it was somewhat crude; I did not see it do any work.

Q. 24. Did you see any astronomical instrument at Mr. Drawbaugh's shop; and if so, what was it?

(*Same objection.*)

Ans. I saw a transit there, or an instrument to take time, like a transit.

Q. 25. Did you ever see any electrical instrument of Mr. Drawbaugh's in Harrisburg, other than the clock; and if so, what was it, where did you see it, and who showed it to you?

Ans. I did; it was an instrument that he called — I don't know whether it had a name, but it was intended to be used to telegraph without a battery. I saw the instrument in the hands of Mr. Drawbaugh himself; he had it on exhibition in one of those small buildings, either a liquor store or a restaurant, across from the passenger depot. I saw him operate it, in the presence of several, one of which was Wilson, the mayor-elect.

Q. 26. Was Mr. Wilson then the mayor-elect or what was his occupation at that time?

Ans. He was not at that time; to the best of my recollection he was connected with the Northern Central Railroad Telegraph, and had his office in Eby's building, up-stairs.

Q. 27. Was that before or after you became alderman; give the date of it as near as you can?

Ans. I could not tell exactly; to the best of my knowledge it was before I was alderman; I became alderman in 1875—I think in March.

Q. 28. Will you now state what clocks you saw at Mr. Drawbaugh's shop, which employed electricity, or had any electrical devices connected with them.

Ans. I saw an old-fashioned eight-day clock in the corner of his office which had an appliance running another clock in some adjoining apartment. I think this appliance was operated by a small battery sitting on

the floor alongside of the clock. I next saw a clock in the room where he did his work, off from the machine shop, which was driven by two plates in the earth—copper and zinc—and was attached to the board partition next to the machine shop. The clock was in somewhat crude condition; that is to say, it had no case and I think had a paper dial; I think it was constructed with a wooden pendulum rod, to the best of my knowledge.

Q. 29. Do you remember anything about the number of wheels this last-mentioned clock had?

Ans. To the best of my knowledge it had three.

Q. 30. Did you see it running?

Ans. I did see it running.

Q. 31. Which did you see first, the eight-day clock propelling another, or the self-propelling clock connected with earth-plates?

Ans. To the best of my knowledge the clock that propelled a secondary clock.

Q. 32. Did you ever see at his shop an electric clock with a finished case?

Ans. I did see an electric clock with a finished case.

Q. 33. Was that the clock for which you gilded the lettering on the dial?

Ans. It was, to the best of my knowledge and belief.

Q. 34. How came you to gild the lettering on that dial?

Ans. I told Mr. Drawbaugh that I was gilding on glass. Now the exact circumstance I cannot tell just now, but he either brought the dial or sent it to me to have done. I think he brought it, as near as my memory serves me.

Q. 35. Did you charge him anything for that gilding, and if not, why not?

Ans. I did not, because he had helped me with some work I had to do.

Q. 36. What work was that?

Ans. He helped me to grind a lens.

Q. 37. Where was that work done, and how long did it take?

Ans. Done in the lower shop, and it took the best part of a day.

Q. 38. Were you there at the shop all that time?

Ans. I was there all that time; that is, the time it was being ground

Q. 39. Were you and he together while it was being ground?

Ans. We were, the greater part of the time.

Q. 40. Was that before or after you became alderman?

Ans. It was during the time I was in office.

Q. 41. During the first, or second, or third year?

Ans. As nearly as I can tell the second or the third year.

Q. 42. Did he come to you to take away the dial when you had finished the work on it?

Ans. To the best of my knowledge he did.

Q. 43. Did he ever come to your house or office and see you at any other times except the times or occasions connected with the dial?

Ans. He has been on other occasions.

Q. 44. If you remember any particular circumstance that took place at or occasioned either of those other visits, please mention it.

Ans. There was an occasion that is a little delicate to mention. I loaned him a small sum of money on one occasion.

Q. 45. Did he tell you what particular purpose he wanted the money for at that time; if so, what?

Ans. To the best of my knowledge, I think he did; it was to purchase material at W. O. Hickok's foundry and machine shop.

Q. 46 Was that while you were alderman, or before?

Ans. While I was alderman.

Q. 47. Have you been in the habit of taking an interest in mechanical and scientific subjects?

(*Objected to as immaterial and incompetent.*)

Ans. I have.

Q. 48. Have you been interested in patents?

(*Same objection.*)

Ans. I have; I have been in two.

Q. 49. When you and Mr. Drawbaugh would meet, from time to time, did your conversation run on mechanical and scientific subjects, or not?

(*Objected to as immaterial.*)

Ans. It did.

Q. 50. When he showed you, in Harrisburg, the instrument for telegraphing without a battery, did he seem to attach much importance to it, or have his mind much occupied with it?

[*Objected to as incompetent.*]

Ans. He seemed to be considerably attached to it.

Q. 51. Please mention something about the construction of the instrument that you saw at the restaurant at Harrisburg for telegraphing without a battery.

Ans. To the best of my knowledge, it was composed of two magnets—one a permanent one, and the other an electro-magnet—the permanent magnet was balanced on trunions. The permanent magnet's poles, passing the poles of the electro-magnet, produced an induced current of electricity. This operated the sounder, or an equivalent. Attached to the machine, he had quite an amount of wire—copper, I think. The clicking was produced by pressing on the permanent magnet.

Q. 52. Do you remember a visit which you and Mr. F. U. Worley made together to Mr. Drawbaugh's shop early in February, 1878, in consequence of which Mr. Worley wrote an article, published in the Harrisburg Telegraph of February 13th, 1878, signed "Observers?"

Ans. Yes, sir; I do.

Q. 53. In your affidavit, heretofore filed in this case on behalf of the complainants, you stated that the subject of speaking telephones, employing a magnet, was mentioned by Mr. Drawbaugh at the time of that visit; had Mr. Drawbaugh before that visit ever stated to you that he had been at work on electric speaking telephones or talking-machines?

Ans. Not to the best of my knowledge and belief.

Q. 54. Did Mr. Drawbaugh ever show you, at his shop or elsewhere, any instruments which he told you were speaking-telephones?

Ans. Not to the best of my knowledge.

Q. 55. Did you ever take part in or witness the use of any speaking-telephones at Mr. Drawbaugh's shop?

Ans. I did not.

Q. 56. Please look at the instruments now shown you marked "F," "B," "C," "C reproduced," "I," "A," "D," "E," "G," "O," "L," "M," "N," "P," "Q," "K," "H," "J," and state whether you ever saw any of them at Mr. Drawbaugh's shop.

Ans. Gentlemen, to the best of my knowledge and belief I don't recognize these. I am conscientious in the matter. I would take the tumbler "F," at first glance, to be a battery, but I notice that it has no bottom in it.

If the magnet on "C reproduced" was equipoised it would look very much like the machine for telegraphing without a battery, that I saw at Harrisburg. The permanent magnet had trunions upon which it was balanced; its poles passed the poles of an electro-magnet. That machine had nothing like the diaphragm and mouthpiece of "C reproduced."

Recess for lunch until 3, P. M.

March 23, 1883, 3 P. M.

Examination resumed pursuant to adjournment.

Present, same counsel.

Q. 57. In your affidavit you state that Mr. Drawbaugh once spoke to you about making musical sounds by vibrations, and in that connection referred to the number of vibrations required to produce the humming sound of a bee's wing; where was it that he mentioned this to you?

Ans. It was near the stove—I don't remember whether I was sitting and he was standing, or I was standing and he was sitting—it was in the shop very near the stove; the stove was right back of the grindstone.

Q. 58. What were you doing there on that occasion?

Ans. Working at the lens that I have already spoken of—grinding the lens.

Q. 59. Will you describe the visit which you and Mr. Worley made to him and which led to the newspaper publication of February 13, 1878, about Mr. Drawbraugh's magnetic clock?

Ans. Mr. Worley and I went over there and went through his shop—through the various departments and the main shop. I think Mr. Drawbaugh spoke to Mr. Worley about a hydraulic ram that was lying there. I think he also talked about an attachment to a lathe for cutting clock gearing. We then went into his office, which faces the Yellowbreeches from the window; he there showed us a clock which was propelled by a zinc and copper plate buried in the earth, which was afterwards described by Mr. Worley in his article.

Q. 60. If anything was said between you about the telephone at that visit, will you please state what Mr. Drawbaugh said about it?

Ans. To the best of my knowledge, he said that he was working on a telephone; that this telephone was worked in connection with an electro-magnet; that the sound produced a kind of back-lash; and that he intended to control it by some means that I cannot describe to you now. I felt a curiosity to see this telephone, and wondered how an electro-magnet could be connected so as to carry this sound. I did not see the instrument. He did not show it at that time.

Q. 61. At whose request did you make the affidavit which the complainants file in this case, as part of their moving papers?

Ans. At the request of Mr. Theophilus Weaver, of Harrisburg.

Q. 62. Before Mr. Weaver first inquired of you what knowledge you had concerning Mr. Drawbaugh's telephones, had anybody spoken to you on behalf of Mr. Drawbaugh concerning them?

Ans. Yes, sir; to the best of my knowledge there was; and I related the story about the back-lash to the party by whom I was interrogated.

Q. 63. Where was it that this party came to see you?

Ans. As far as my memory serves me, it was at my school-room door.

Q. 64. Was it Mr. Drawbaugh or Mr. Jacobs who came to see you?

Ans. It was not Mr. Drawbaugh, and I am not sufficiently acquainted with Mr. Jacobs to know whether it was he.

Q. 65. What day this week did you leave home to come here to Philadelphia to testify?

Ans. Wednesday, at four o'clock, on the Reading road.

Q. 66. Did Mr. Drawbaugh call on you, and talk to you, about this case shortly before you came down; and, if so, when?

Ans. Mr. Drawbaugh did see me on Monday. He merely referred to the case, though.

Q. 67. Where did he see you?

Ans. In my school-room, on the second floor of the building.

Q. 68. Did he ask you anything about your testifying in this case; and, if so, what?

Ans. I don't know whether he referred to me being a witness, or not. He stated that it was strange that I didn't see any of his devices for telephoning. I said I was sorry. That I would have liked to have seen something that would have been evidence in his favor. I think I spoke to him about this confusion of sound then. I think I made use of the term "back-lash." I think I told him that I had no animus at all in this matter, and would like very much to do anything I could to help him. I think that is about all.

Cross-examination by Mr. Hill:

Cross-Q. 69. I understand you that you became intimately acquainted with Mr. Drawbaugh; at what time do you consider that you began to be intimately acquainted with him?

Ans. As nearly as I can tell it must have been between 1866 and 1867. I haven't got a very retentive memory for dates, and I associate those dates with a circumstance: I had a grocery store in 1866 and 1867, along there, in Harrisburg. During that time Mr. Weaver and I bought of Mr. Patton a patent for a metal clip, by which to attach an eraser to the head of a pencil. It was necessary to have a machine to stamp out these clips. Mr. Patton advised us to go to Mr. Drawbaugh to have it made, and that is what took us there.

Cross-Q. 70. As you consider yourself to have been intimately ac-

quainted with Mr. Drawbaugh for the past sixteen years, please state whether or not you regard him as an upright, conscientious, and truthful man.

Ans. As far as I know, I do; he has always acted honorably with me.

Cross-Q. 71. Have you been at his shop since the visit which you made with Mr. Worley, in the early part of 1878?

Ans. Not to my recollection.

Cross-Q. 72. When were you at his shop last, before that visit with Mr. Worley, so far as you can remember?

Ans. I could not be certain whether it was 1877 or not; I think most it was; I wouldn't be certain about that.

Cross-Q. 73. Was it at the time when you got the lens ground?

Ans. About that time.

Cross-Q. 74. Can you swear that it was not in the year 1875 that you got the lens ground?

Ans. Of course I should hate to swear; I could give a circumstance that brings it after 1875; I am saying this to the best of my knowledge and belief, now; when I first went into office, I located on Broad street, which was in March, 1875; and I did not move to where I was last until some time in July, and then I moved office and all. I bought an office next to where I then was, and moved it down to where it is at present; this was in July, 1875; my impression is that I didn't grind the lens that first year.

Cross-Q. 75. Didn't you go to see him about grinding the lens quite a long time before you took it over to his shop to be ground?

Ans. I did go to see him—how long a time I don't know—previous to having it ground.

Cross-Q. 76. Did not the conversation about sound vibrations and the buzzing of the bee's wing take place at or before that preliminary visit which you made when you went to see him about grinding the lens before you took it to be ground?

Ans. As nearly as I can remember, it was at the time the grinding was going on. I didn't have dinner, and spent nearly the whole day there.

Cross-Q. 77. In the course of that conversation, did Mr. Drawbaugh appear to be pretty familiar with the subject of sound vibrations?

Ans. He seemed to be quite fluent that day on that subject. I should have said enthusiastic.

Cross-Q. 78. Did he speak of it as a matter that he had studied up in books, or as a matter which he had investigated by personal experiment?

Ans. I couldn't say.

Cross-Q. 79. What is the last time that you can remember being at his shop before the time you went there to see about having the lens ground?

Ans. I can't remember.

Cross-Q. 80. Can you remember being there at his shop at any particular time between the year 1867 and the time when you went to see about getting the lens ground?

Ans. I saw his nail-machine there—I think about 1871 or '2; I can remember circumstances better than dates.

Cross-Q. 81. Do you remember what you went there for at the time you saw the nail-machine?

Ans. I think it was curiosity to see the machine, as nearly as I can remember.

Cross-Q. 82. Do you remember being in his shop at any particular time between the visit when you went to see the nail-machine and the first visit to see about getting the lens ground?

Ans. I can't remember any particular date, without it was about 1873 or perhaps 1874.

Cross-Q. 83. Are you sure you were at his shop in 1873 or 1874?

Ans. Not quite sure.

Cross-Q. 84. Are you sure you were there in 1872?

Ans. To the best of my knowledge I was there in 1871 or '2; I can't say which year, but think it was 1872.

Cross-Q. 85. Do you remember any particular occasion when you were at his shop between the year 1867 and the time when you went to see the nail-machine?

Ans. Not that I remember now; as I before stated, I saw various appliances there, but I couldn't swear as to the years when I saw them.

Cross-Q. 86. Did you ever visit him at his residence, or stop over night there, or take a meal there?

Ans. I think I called at his house once; I never was in his house to my knowledge.

Cross-Q. 87. Are you personally acquainted with his wife or any members of his family except himself?

Ans. I knew her when we were children; I don't know that I have seen her since, more than to speak to her.

Cross-Q. 88. Are you a married man, and do you keep house?

Ans. Yes, sir; I am a married man and keep house.

Cross-Q. 89. How long have you kept house, and where?

Ans. About twenty-five years; in Harrisburg.

Cross-Q. 90. Has Mr. Drawbaugh ever taken a meal in your house in that time?

Ans. Not that I remember.

Cross-Q. 91. Has he ever been inside of your house in that time?

Ans. He has.

Cross-Q. 92. How many times?

Ans. I do not know; I think he was once or twice in my office.

Cross-Q. 93. When he was in your house was he there as a matter of business or merely socially?

Ans. I am unable to say definitely. He had been to see me on business, either in the office or at the house.

Cross-Q. 94. What kind of a school have you kept—private or public; and if public, what grades?

Ans. Public school. Intermediate and grammar grades principally.

Cross-Q. 95. How long have you made school-teaching your business?

Ans. As nearly as I can tell now, thirty-three years.

Cross-Q. 96. When you and Mr. Worley were at Mr. Drawbaugh's shop, in the early part of 1878, how happened you to go there; what caused that visit?

Ans. We went there to see an electric clock that he had constructed.

Cross-Q. 97. How happened you to go to see the clock?

Ans. I had been there before and had seen one of these electric clocks, and I induced Mr. Worley to go along with me, to see the one which he had constructed, and had in a state of completion—as much to give Mr. Drawbaugh a puff as anything else.

Cross-Q. 98. How did you know that he had one in a state of completion; had you seen seen it before, or had you only heard of it?

Ans. As nearly as my memory serves me now, I had seen this clock very nearly completed, but without a dial; the dial for this clock I gilded.

Cross-Q. 99. Did you see it at the time you got the lens ground, or was it afterwards?

Ans. It was afterwards.

Cross-Q. 100. How happened you to be there when yon saw it without a dial?

Ans. I don't remember.

Cross-Q. 101. You don't pretend to give the entire conversation, or

the exact words of the conversation, about the telephone at the time when you and Mr. Worley were there, do you?

Ans. The words were as nearly as I have stated, to the best of my recollection.

Cross-Q. 102. Do you mean that you have stated them as nearly as you can remember them?

Ans. Yes, sir.

Cross-Q. 103. Have you given the entire conversation about the telephone, or was there more said, that you do not remember?

Ans. As far as I remember, I have given the entire conversation. There was more said about clock than telephone that time.

Cross-Q. 104. How long was that visit before the date of the news paper article which Mr. Worley wrote?

Ans. I don't know precisely.

Cross-Q. 105. In your affidavit in the moving papers you say that Mr. Drawbaugh stated to you and Mr. Worley that he was experimenting on a telephone; did you understand him as speaking in the present tense?

Ans. I did understand it that way.

Cross-Q. 106. Then he didn't say anything about telephones that he had made and operated prior to that time, did he?

Ans. No, sir; he did not, to the best of my knowledge.

Cross-Q. 107. He did not tell you that the violent sound, or confusion, or back-lash, or double sound had been experienced in the telephones that he had made and operated prior to that time, did he?

Ans. I only know of one telephone that he spoke about; I didn't understand that he spoke about any other telephone but this one.

Cross-Q. 108. Did he say anything about remedying this back-lash defect in that one telephone by any peculiar kind of a box or other thing to which the ear could be applied?

Ans. He did speak of remedying it, but the device that he was going to use I could not describe; I think most it was a box of some kind.

Cross-Q. 109. Mr. Worley, in his affidavit in the moving papers, states, among other things, as follows: "Mr. Drawbaugh told us he had obtained some results on a telephone he was then getting up, but that he had not yet got it perfected so that the voice could be transmitted so as to be understood, as the sound was too much diffused." Do you remember anything of that kind being said?

Ans. Mr. Worley may have used the term "diffused;" I don't remember distinctly.

Cross-Q. 110. Referring to the rest of the quotation I have made from Mr. Worley's affidavit, and irrespective of the word "diffused," do you remember it as part of the conversation, now that you have heard what Mr. Worley says about it?

Ans. I am sure that the term "back-lash" was used; I don't remember just those words used in the quotation.

Cross-Q. 111. Then either you do not remember the entire conversation or else Mr. Worley states it incorrectly; is not that the fact?

Ans. The statement that I have made is as nearly correct as I understood him to say it at the time.

Cross-Q. 112. But as you did not state the matter which I have quoted from Mr. Worley's affidavit and as Mr. Worley did not state anything about the confusion or back-lash, or double sound, or violence, it would seem to follow that you and Mr. Worley are not able to state the conversation alike; would it not?

(*Objected to by Mr. Storrow for the reason that both the witness and Mr. Worley have stated substantially the same thing.*)

Ans. It would seem so. The way I have stated it is the way I heard it from Mr. Drawbaugh, as near as I can remember.

(*Witness answered the above question before the question was written down, and before the objection was stated.*)

Cross-Q. 113. Mr. Drawbaugh is now at work inventing a new telephone, which is not yet completed. You do not know but that he could truthfully make the same statement about that new telephone that he is now working on, that he made to you and Mr. Worley in the early part of 1878 about the new telephone that he was then working on, do you?

Ans. No; I don't know whether he could make the statement or not.

Cross-Q. 114. You have stated in answer to question 62, that before Mr. Weaver first inquired of you what knowledge you had of Mr. Drawbaugh's telephones, some person had spoken to you concerning them on behalf of Mr. Drawbaugh; how do you know that was done on behalf of Mr. Drawbaugh?

Ans. I am not positively certain whether Mr. Weaver told me that was the opposite party or not; I rather think he did.

[*So much of the testimony of this witness as states or implies that the inquiry of said person was made on behalf of Mr. Drawbaugh, is objected to as hearsay.*]

Redirect by Mr. Storrow:

Q. Q. 115. Was the person whom you understood applied to you on behalf of Mr. Drawbaugh, a rather small young looking man?

[*Objected to, first, because the witness does not appear to have understood, or had any reason to understand, anything about it; and secondly, because Mr. Drawbaugh does not monopolize all the small young-looking men; and hence the inquiry is immaterial and incompetent.*]

Ans. Yes, sir; to the best of my knowledge he was.

Q. Q. 116. Did he ask you whether you ever saw any telephones at Mr. Drawbaugh's shop?

[*Objected to as irrelevant and incompetent, the person not being shown to have been in any way connected with the case or the parties defendant thereto, nor with Mr. Drawbaugh.*]

Ans. I don't remember; he may have asked me what I knew about it; I most think he did.

Q. Q. 117. Did you tell him what you knew about it?

[*Same objection*]

Ans. I did; I told him substantially the same that I made in my affidavit; it may not have been the same words, but was substantially the same.

Q. Q. 118. Did he then go off without taking your affidavit and tell you that he should not need your evidence?

[*Same objection, and further objected to as leading, it not having appeared that the party went to take evidence, or intended to take evidence, or said anything about it.*]

Ans. He never took my affidavit; to the best of my knowledge he said nothing further.

Q. Q. 119. At one time the Kline Patent Axle Company, of which Captain J. A. Moore and his father-in-law, Jacob Kline, were members, made Kline's patent conical axles at Drawbaugh's shop. Did you ever see the manufacture of those axles going on at that shop?

Ans. To the best of my knowledge I did not.

Q. Q. 120. That company had a drifting-tool, got up by Mr. Drawbaugh, which has sometimes been called a tool to bore square holes; did you ever see that tool, and if so, was it at work when you saw it?

[*Objected to as new matter.*]

Ans. I did see it; it was not at work at the time, but, if I remember, Drawbaugh explained to me how it worked.

Q. Q. 121. It has appeared somewhere in the testimony that at one time you employed electricity in electro-plating to some extent; what is the fact about that, and if so, when was it?

[*Same objection.*]

Ans. As nearly as I can remember it must have been in 1874.

Q. Q. 122. Did you electro-plate articles for sale?

[*Same objection.*]

Ans. I electro-plated watches, chains, and window-catches, chiefly; for which I was paid.

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me the 23d day of March, 1883.

FRED. M. OTT,
Examiner.

ISAAC LLOYD.

Adjourned until March 24, 1883, at 10, A. M.

March 24, 1883, 10, A. M.

Examination resumed pursuant to adjournment.

Present same counsel.

ANDREW R. KIEFER, *being produced, sworn, and examined, saith:*

Examined by Mr. Storrow:

My age is forty-three; residence, Harrisburg, Pa.; occupation, division operator, middle division, Pennsylvania Railroad; I have charge of the telegraphs of the whole middle division.

Q. 1. How long have you been division operator?

Ans. Since April 17, 1863.

Q. 2. Did you put up the fire-alarm for the city of Harrisburg, and if so, when did you furnish it, and deliver it to the city?

Ans. Yes, sir; under a contract with Gamewell & Co. of New York, who own the fire-alarm patents. I can't say the day I finished it, but the contract called for it to be finished February 3 or 4, 1873; it was finished in time for the date of the contract.

Q. 3. How long have you known Daniel Drawbaugh of Eberly's Mills?

Ans. I cannot give any idea as to the length of time I have known him, but should think it must date back about some seven years, at any rate.

It is almost impossible for me to fix the time, as I have no written data that I could refer to.

Q. 4. Do you remember his showing you a telegraph instrument in Harrisburg, and if so, state what you remember about it?

[*Objected to as immaterial and irrelevant.*]

Ans. I remember him coming to me at, or in the immediate neighborhood, of the Pennsylvania passenger depot, Harrisburg, and asking me to look at an instrument that he had, which he led me to infer was something that could be used as a fire-alarm, to give signals over a wire without any battery. I looked at it, and he showed me the operation of it, making some signals by it to show that, if I recollect rightly, it could be used as a telegraph instrument also. This was, I think, in Mr. Walz' wholesale liquor store, near the railroad depot, or a room in the immediate neighborhood.

Q. 5. How long after you finished the fire-alarm was this—about?

[*Same objection.*]

Ans. I cannot say definitely; I think within one or two years of the time.

Q. 6. Did Mr. Drawbaugh ever bring to your office the works of an electric-clock to show you?

[*Same objection.*]

Ans. I have a faint recollection of his doing so, as I recollect of telling him at one time that there was an objection to a certain mechanical part in it, which he said he would, or had, remedied in a larger clock or another clock. The objection, I think, was, the second-hand going in a contrary direction from the usual course.

Q. 7. Did Mr. Drawbaugh, on other occasions, from time to time, come to your office, or meet you around the depot, and speak to you of electrical matters?

Ans. Yes, sir; he came there on different occasions—how often I can't say; he got pieces of wire from me and would speak of electrical matters, more especially so of things appertaining to what he had constructed and how he came to his electrical knowledge, and so on.

Q. 8. Did he ever bring an electrical speaking telephone to you?

Ans. No, sir; not to the best of my recollection.

Q. 9. Did he ever tell you before this suit began that he was at work upon, or had been at work upon, an electrical speaking telephone? This controversy began in 1880.

Ans. Not to my recollection.

Q. 10. In 1880, or subsequently, did he come to you and ask you if you knew anything about his speaking telephone?

Ans. I shall have to answer that question in a peculiar way. He did not come to me at any time that I recollect of, although it is possible that he did so. In the summer of 1881 I took my wife out for a drive and went over to see his works, never having seen them, and having promised him to come and see him some time; my wife not caring about going to the shop remained in the carriage; and I went through alone with Mr. Drawbaugh. He showed me through the shops and introduced me to Mr. Chellis; and showed me parts of the water-motor and some other things of his getting up. On account of my wife's being in the carriage alone I did not stay long. As I stepped into, or was just in the carriage, Mr. Drawbaugh said: "I forgot to show you my telephone." I did not get out again to go and see it and I drove away without seeing it, expecting to see it again, but I have never got over to the shop since.

Q. 11. You have evidently misunderstood my question. What I desire to know is, whether Mr. Drawbaugh, or Mr. Drawbaugh and Mr. Jacobs, have ever inquired of you concerning your knowledge of Mr. Drawbaugh's alleged invention of the telephone, with a view to obtaining your testimony in this suit.

Ans. Yes, sir; Mr. Drawbaugh asked me one day whether he had shown me his telephone, or told me that he had one. I told him "No, sir," that he had not to my recollection. He afterwards came to my house with a gentleman whom I think he introduced as Mr. Jacobs, and they questioned me about Mr. Drawbaugh's having spoken to me about a telephone of his, or having shown it to me. I answered them the same; that is, that I did not recollect of him having done so. I supposed it was with a view of getting my testimony that the questions were asked, and I think I made the remark that I was sorry I could not help him, as I would have liked to if I could.

Q. 12. If, before you had ever heard of electric speaking-telephones elsewhere, Mr. Drawbaugh had brought you a set, or had told you that he had a set by means of which conversation could practically be carried on along a wire, do you think that would have impressed itself on your mind so as to remain fixed there?

[*Objected to as hypothetical, calling for mere opinion, and incompetent.*]

Ans. I think it would without a doubt, if he had made it plain to me that such could be done, or had explained the means.

Q. 13. Did the Pennsylvania Railroad Company have at Harrisburg,

a system of electric clocks, in which one regulating clock controlled the others by an electric circuit and battery; and if so, when was it put up, and who put it up?

Ans. Yes, sir; they have a system of clocks that are moved entirely by electricity generated by two batteries. They were put up by myself with the assistance of my men, somewhere about August, 1871 or '2, I think; I am not sure of the year.

Cross-examined by Mr. Hill:

Cross-Q. 14. Do you keep an electrical supply store at Harrisburg?

Ans. Yes, sir; that is, I have part of a store there that my wife has a grocery store in, in which I keep them.

Cross-Q. 15. How long have you kept electrical supplies for sale in Harrisburg?

Ans. I have nothing with me to get near the date; I think it was either just before, or just after Centennial year 1876—somewhere about there.

Cross-Q. 16. Did you not know Daniel Drawbaugh, before the fire-alarm was put in at Harrisburg?

Ans. I cannot answer that question; I have nothing to fix the time of his acquaintanceship in my mind.

Cross-Q. 17. Did Mr. Drawbaugh show you his fire-alarm apparatus?

Ans. Yes, sir; he showed me the apparatus; what it exactly consisted of I now fail to remember, anymore than that it was a system of magnets and permanent magnets fixed in such a way that he could move a part of it in a manner somewhat similar to a telegraph key, by which he acquired the force by which he caused the signals to be given. I cannot describe the instrument now, as my impression at the time was that it would not be of any practical value for long distances; and I paid very little attention to it; it was a magneto-telegraph.

Cross-Q. 18. When do you fix the date of his showing you that instrument?

Ans. I cannot. It was after February 4, 1873, because he said it would do away with batteries in fire-alarm telegraphs such as we had in Harrisburg. From that fact of the conversation being of that nature I know it was after this date; closer than that I cannot come.

Cross-Q. 19. You were formerly a member of the firm of Hahl, Kiefer & Co.?

Ans. Yes, sir.

Cross-Q. 20. When was that firm established and from what time to what time did it do business; and what was its business?

Ans. I would have to refer to the copartnership papers to get the dates, but it was somewhere about the year 1867 that the partnership was formed. I remained a partner until the winter of 1881–2. Their business was the manufacture of burglar-alarms, electric hotel annunciators, and fine electric work for the Government—instruments for the Signal Bureau—patent-models, etc.

Cross-Q. 21. Who were the other partners in the firm besides yourself?

Ans. Robert Ferriday, of Harrisburg, Pennsylvania, now deceased, was a special partner, and appeared as such on the cards; Mr. Hahl and I were general partners. Mr. Ferriday withdrew about three years ago, I think—shortly before his death. We settled up, and then took in Otmer Mergenthaler as another partner. There were several other partners in for a short time having special interests, but I cannot name them without referring to the papers. I think Mergenthaler was in just a short time before I withdrew. The works were always away from me; they were always at Washington and Baltimore.

Cross-Q. 22. Mr. Augustus Hahl, superintended the manufactory at Washington and Baltimore, did he not?

Ans. Yes, sir.

Examination taken, reduced to writing, and by the witness sworn and subscribed to, before me this 24th day of March, 1883.

FRED. M. OTT,
Examiner.

A. R. KIEFER.

Adjourned until Thursday, March 29, 1883, at ten, A. M.

MARCH 29, 1883, 10, A. M.

Examination resumed, pursuant to adjournment.

Present, Mr. Storrow, for complainants, and Mr. Hill, for respondents.

FRANK L. POPE, *being affirmed and examined, saith:*

Examined by Mr. Storrow:

My age is forty-two; residence, El Mora, near Elizabeth, New Jersey; I am at present, and have been since 1880, a solicitor of patents,

my practice being confined almost exclusively to patents for inventions involving the practical application of electricity and magnetism. A large part of my business has been the giving of opinions upon the novelty and practical operation of electrical inventions, and the giving of expert testimony in relation thereto before the United States Courts.

Q. 1. Please state for how long and to what extent you have paid attention to the subject of electricity, and what your opportunities have been for obtaining a theoretical and practical knowledge of it in its various applications in the arts, particularly with relation to the transmission of signals.

Ans. My time for twenty-five years has been entirely occupied in pursuits having to do with the practical applications of electricity and magnetism, with the exception of an interval of perhaps two years when I was not directly so occupied. In 1857, when about seventeen years of age, I entered the service of the American Telegraph Company as an operator, having already acquired a pretty full knowledge of the theoretical principles of electricity and its action, through my studies in school. I remained in this position about a year and a half, when I was placed in charge of a telegraph line between Springfield, Mass., and Albany, N. Y., and in 1862 I was appointed principal assistant to Marshall Lefferts, engineer-in-chief of the American Telegraph Company at New York. While occupying this position my duties were of such a character as to give me practical experience with the operation of electrical apparatus under various conditions, covering a very wide field. The American Company was a recently formed consolidation of a great number of detached organizations varying widely in their methods of operation and in the character of the apparatus, batteries, and other instrumentalities employed by them. The duty of examining and testing all these different systems, and determining upon a standard to be used by the consolidated organization, was assigned to me, and in pursuance of this object I was obliged to make a great number of experiments and tests under different conditions, by which means I acquired a stock of information in connection with the application of electricity to telegraphic and signalling apparatus (which was its only important application at that date,) which was probably as great or greater than that possessed by any other person in the country at that time. Specimens of the apparatus used on the telegraph lines of Europe were also imported by the engineer-in-chief, and were included in the comparisons and investigations which were then made. This work occupied two

years of incessant labor, in consequence of which my health was seriously injured, and I was led to accept a position as assistant engineer of the Russo-American telegraph organization, which undertook, in 1865 and 1866, to connect the United States and Europe by telegraph, by the way of Alaska, Behring's Strait, and Siberia. I was absent from the country about two years on this service. Immediately after my return in 1867 I was engaged by Mr. S. S. Laws, the inventor of the first apparatus for the simultaneous reporting of stock and market quotations, to organize a system of electrical lines and apparatus for putting the invention into practical use. This was an entirely new application of telegraphy, involving the simultaneous operation in unison of many hundred automatic visual or type printing instruments upon lines radiating in many directions from a single transmitter, and presented numerous difficulties. The system was immediately constructed and was in successful operation at the beginning of 1868, the work being entirely under my direction, and the connection and adjustment of the apparatus was nearly all done by myself personally. This was the original nucleus of the system which is now operated by the Gold and Stock Telegraph Company in all the principal cities of the United States. After this system was sold by Mr. Laws to the Gold and Stock Company, I organized a system of private telegraph lines, using a type-printing instrument especially adapted for the purpose, which was jointly invented by myself and Mr. Edison. This enterprise met a great public want, and our business increased so rapidly that we were obliged to form a stock company called the American Printing Telegraph Company, to procure the necessary capital to carry on the business. A controlling interest in the stock of this company was ultimately purchased by the Gold and Stock Company, after which it was consolidated therewith, and within a few years became one of the most important features of their business. In 1871 I invented a method of operating railway signals automatically, by placing the entire track in the electric circuit; and was constantly occupied until 1875 in the improvement and development of the system.

My inventions and business in this line are now owned by the Union Switch and Signal Company of Pittsburgh, Penna., and are in extended practical use on the Pennsylvania, Pittsburgh Fort Wayne and Chicago, and many other leading railways of the country.

In 1875 I became the special advisory electrical expert of the Western Union Telegraph Company and also of the Gold and Stock Telegraph

Company, a position which I retained until 1880, when I resigned in order to enter upon my present business. My duties as advisory expert were to make examinations of the novelty and utility of all new inventions having to do with the transmission of signals by electricity, and to make reports upon the same to the general officers of the respective companies upon such as it appeared to be important to use or control in connection with the business of the companies. In the pursuance of this duty I had occasion to make critical and comparative examinations of a great number of inventions of the character above referred to, among which were some of the most important and valuable now in use; and I have reason to believe that the policy of the companies, with reference to the purchase and adoption of these inventions, was largely governed by my reports upon the same.

In addition to the practical work which I have done, I have written a great number of papers mostly of a practical character upon electrical subjects, which have been published in the current scientific journals of America and Europe; and I have also written a manual of telegraphy which was published under the title of "Modern Practice of the Electric Telegraph," which I am informed by my publisher has had a larger sale than any work ever published in the English language upon any subject of that character.

Q. 2. Please state what particular attention you have paid to the subject of electric telephony including therein the harmonic musical telgraph—so-called—and the electric speaking telephone; and, also, please state what particular occasions and opportunities you have had for so doing.

Ans. During the first year that I was with the Western Union Telegraph Company a great number of experiments and tests of Elisha Gray's system of multiple harmonic telegraphy and of transmitting musical sounds by telegraph were made by the electricians of the company under the direction of Mr. Gray, and a part of the apparatus was placed in my room. Although not directly in the line of my ordinary duties at that time, I was much interested in the apparatus from a scientific point of view and was familar with everything that was done, frequently assisting in the tests, especially when telegraphic signals were required to be received by sound, as I had acquired much skill in this respect during my experience as a telegraphic operator. It was frequently convenient in the course of the experiments, to employ a receiving operator who could read the telegraphic signals and was also well the con-

struction and principle or method of operation of the apparatus; and in such cases I was usually called on. During a visit to Boston, in 1877, I casually saw, for the first time, a speaking-telephone apparatus and heard words transmitted through it from a point half a mile off. Being much impressed with the importance of the invention in its application to private telegraph lines, upon my return to New York I at once called the attention of the officers of the Gold and Stock Company to the matter, as it seemed to me that it opened up a prospect of a competing system of private lines. I may remark that the Gold and Stock Company up to that time held a practical monopoly of that branch of business by virtue of their patents on type-printing telegraphs. Nothing was done about the matter at that time, as I could not then convince them that such an instrument could be made practically serviceable for that business. At a later day, however—if I recollect rightly, in the summer of 1878—the companies by whom I was employed had become convinced of the importance and value of the speaking-telephone, and the result of this conviction was that I was directed by Mr. William Orton, then president of both companies, to make a thorough investigation of the subject, and ascertain under what patents, if any, the right to use the apparatus would have to be obtained. Every possible facility was placed at my disposal in the prosecution of this investigation. A general order was sent to Europe for every book and pamphlet that could be obtained which had been published within the last fifty years, relating to electricity, the telegraph and allied subjects. A vast amount of this sort of literature was collected, the principal portion of which was in the German language. A skilled scientific translator, familiar with eight different langauges, was employed to assist me in going over it. In this manner I became thoroughly familiar with the state of the art with reference to the electrical transmission of vibrations and also with the patents relating to the subject, which were, however, at that time very few in number. I presume that at the end of the year 1878, I was more fully acquainted with the state of the art with relation to this subject than any other one person, owing to the extraordinary facilities which had been freely placed at my disposal by President Orton. Since that time it has been necessary for me in the course of my ordinary business to keep myself informed as fully as possible of the progress of the art; and I believe I have been able to do so.

Q. 3. Please state what inventions you find set forth in Mr. Bell's patent 174,465, of March 7th, 1876, referred to in the bill.

[*Objected to by Mr. Hill, as incompetent and not rebutting.*]

Ans. The patent referred to purports to be an improvement in telegraphy, but it has to do or concerns itself with sonorous vibrations and their production at a distant station by means of electricity.

The drawings to which the description in the specification refers, show two different kinds of apparatus, of which a careful reading of the specification shows Fig. 5 and Fig. 7 to be what may be considered as typical forms. These two forms differ, not only in their mechanical construction, but in the purpose for which they are respectively designed. The particular form given to each, in order to better adapt it to its intended purpose, renders it partially or entirely unfit to properly serve the purpose of the other. There is, however, one feature common to both these types of apparatus, which is, that when the moving portion of the transmitter performs mechanical vibrations—whatever may be the form or character of these vibrations—a corresponding effect is produced in the electrical portion of the apparatus; that is to say, what the patentee terms electrical undulations are produced; and these undulations, in their several characteristics of frequency of recurrence, of relative amplitude and of form, faithfully copy the corresponding characteristics in the mechanical movement of the transmitter.

The moving part shown in the class of transmitters of which Fig. 5 is a type, is designed more especially for multiple telegraphy, and the armature of the transmitter and receiver are adapted to vibrate at a certain determinate pitch, which is the same for each, and for the purposes of multiple telegraphy it is only necessary to transmit pitch. The quality of *timbre* of the sound is of no importance in this application. For example, two transmitting instruments having precisely the same pitch, but differing widely in form or quality of vibration, might either of them be used to produce signals upon a receiver of the same pitch; and so also, two receiving instruments having the same pitch, but differing in their form of vibration, might be used interchangeably in connection with a transmitter of corresponding pitch. And in such case the results would be, in a practical and commercial sense, the same.

In the case of apparatus of which Fig. 7 is a type, the moving portion of the transmitter, when thrown into vibration, acts precisely like that of Fig. 5, in that it produces in the electrical portion of the apparatus electrical undulations, which, in their several characteristics of rate, relative amplitude, and form, are similar to those performed by the moving portion of the transmitter.

The essential difference between the two types of apparatus is this: The moving portion of the transmitter and of the receiver in the type represented by Fig. 7 has no inherent tendency to perform any particular rate or character of vibration, but is so constructed as to take up and execute vibrations of any character whatever which any exterior vibratory force may seek to impress upon it. This, as I have said, is true of the moving parts of both the transmitter and the receiver. Thus if in the apparatus, Fig. 7, two transmitters, alike in pitch or rate, but differing in form of vibration, were applied successively in connection with the same receiver, the results would not, as in the case of Fig. 5, be the same; and not only that, but if they were the same, they would be of no practical or commercial value for the purposes for which this apparatus is designed.

The results arising from this mechanical modification of the apparatus are of the highest importance. The moving portion of the transmitter will freely take up vibrations of any degree of rapidity, of any form or other characteristics whatever, no matter how complex, which have been imparted to the surrounding atmosphere, as by the production of sound, and will produce in the electrical portion of the apparatus undulations which are precisely similar to those of the air-particles from which they were originally derived; and these undulations in turn will act upon the moveable portion of the receiver; and inasmuch as this is also capable of responding freely to any external force impressed upon it, the electrical undulations will act upon it and compel it so to do. By reason of the large surface which may, by this means, be thrown into vibration in the receiving instrument, its vibrations are imparted to the adjacent air, from which it results that a sound is produced in the neighborhood of the receiving instrument, which is similar to that by means of which motion was originally imparted to the transmitter. In this manner the vibrations into which the air is thrown by the voice of the speaker in the neighborhood of the transmitting instrument are imparted to the air in the vicinity of the receiving instrument, retaining all the charactertstics of rate, amplitude, and quality, which are peculiar to articulate speech; or, in the words of the patent, "a similar sound to that uttered into A" [the transmitter] "is then heard to proceed from L," [the receiver.]

The essential features which characterize the mode of operation of the apparatus last described are summed up concisely in the fifth claim of the patent, and consist, as the claim states, in causing electrical un-

dulations similar in form to the vibrations of the air accompanying vocal or other sounds.

I do not understand that the method set forth in the fifth claim is confined to the use of transmitters like those shown in the drawings accompanying the patent, and in which the moving parts of the transmitter produce the electrical undulations by magneto-induction; for it evidently includes within its scope other devices whereby electrical undulations are produced, corresponding to the movements of the transmitter under the influence of sonorous vibrations, some of which are mentioned in the specification as equivalents.

The fifth claim of the patent, in stating the nature of the operation by which sounds are transmitted, sets forth everything required to be made known in addition to the common stock of knowledge in existence at the date of the patent, which was essential to the successful transmission of articulate speech by means of electricity; and in fact, so far as is known at this day, articulate speech cannot be successfully transmitted, if any portion of the method set forth in the fifth claim as the invention of the patentee, be omitted. I have not mentioned all the advantages which flow, and which are stated by the patentee to flow, from the employment in telegraphy of undulatory currents corresponding in their character to that of the vibratory movements of the transmitter or transmitters, but have only referred to such as seemed to me to have a bearing upon the present case. I will mention, however, one characteristic which is alike common to both kinds of apparatus of which Figs. 5 and 7 of the patent are the respective types. Every apparatus and method for the electrical transmission of sound which was known prior to the date of the patent, so far as my knowledge extends, was designed to operate by the alternate closing and breaking of an electric circuit by means of the transmitter. Such a mode of operation would be absolutely fatal to the production of the results designed to be attained by the apparatus shown in Fig. 7, and, moreover, would not possess any of the advantages which are attained, as the patentee sets forth in his specification as arising from the employment of undulatory instead of intermittent currents.

The apparatus shown in Fig. 7 of the drawings and described in the specification in connection with said figure, is an articulating telephone. It contains all the elements necessary for its intended purpose, and these are combined together in such a manner that a practically operative speaking-telephone can be constructed in accordance therewith. Moreover, it

seems to me perfectly evident from a careful reading of the specification that this was the chief purpose for which the patentee designed the apparatus shown in Fig. 7. He says, after describing the class of instruments of which Fig. 5 is the type, "I desire here to remark that there are many other uses to which these instruments may be put, such as the simultaneous transmission of musical notes, differing in loudness as well as in pitch, and the telegraphic transmission of noises or sounds of any kind."

The phrase "transmission of noises or sounds of any kind" would, of necessity, seem to include articulate speech; but after making this general statement the patentee goes on to describe the particular modification of his apparatus shown in Fig. 7, whereby, as he says, "motion can be imparted to the armature by the human voice," or by other specified means. Finally, he describes the manner in which the apparatus is operated "when a sound is uttered in the cone" (of the transmitter) etc., and after tracing the continuous chain of operations through the apparatus from the transmitter to the receiver, concludes with the statement: "A similar sound to that uttered into A is then heard to proceed from L."

When the patentee speaks of the utterance of sounds by the human voice the plain and obvious signification of the term is, that the utterances are another name for articulate spoken words; and it seems clear that this is precisely what the patentee meant, especially in view of his previous remark, to the effect that the apparatus is adapted to accomplish the telegraphic transmission of noises or sounds of any kind.

Q. 4. Will you state whether one skilled in the manufacture of acoustic and electrical apparatus at the date of Mr. Bell's said patent, and possessed of the common stock of knowledge and technical skill belonging to those arts at the date of said patent, could, by the use of that knowledge and skill, and by following the information furnished him by the Bell patent, construct an apparatus which would perform the operations attributed to Fig. 7, and thereby transmit articulate speech?

Ans. I think there is no doubt whatever that a person so skilled could have constructed an operative apparatus at the date of the patent, and which would produce the results which the patent states may be produced thereby, namely, the transmission of noises or sounds of any kind, including articulate speech.

Q. 5. Have you ever caused to be constructed, under your own supervision, an apparatus in conformity with the description and drawings in the patent, relating to Fig. 7; and did you, by means of it when con-

structed, transmit articulate speech sufficiently to satisfy yourself that the instrument was practically operative for that purpose?

Ans. I did cause such apparatus to be constructed under the following circumstances: In the summer of 1879, testimony was being taken on the part of the defendants in an action brought against P. A. Dowd by the Bell Telephone Company, in which I was employed by the defendant as an expert. Certain apparatus was shown me by the complainants' expert, Mr. Cross, which was alleged to have been made in accordance with Fig. 7 of the Bell patent, and to be an operative apparatus. Having some doubts as to the degree of operativeness of said apparatus, and it being very important that the defendant should know the precise fact, I directed a skilled workman in the manufactory of the Western Union Telegraph Company in New York, to construct an apparatus from the drawings of the patent, giving him no specific directions, except to make the apparatus work if he possibly could. When the apparatus was completed I experimented with it between two parts of the factory building widely separated from each other, and although it was a somewhat noisy place, I succeeded in hearing and understanding what was said through the apparatus, and in carrying on a conversation; and I may say that the results were considerably better than I had expected to get, the only noticeable defect in the articulation being a certain hollowness of sound, to which, however, we soon became accustomed, so that it caused little or no indistinctness.

These instruments were, as I remember, rather more than twice as large as the representation in the printed Patent Office copy of the patent, the diaphrams being, say, about two and a half inches in diameter.

Q. 6. As I understand the operation of the apparatus, Fig. 7, it is called into activity by the impact upon the transmitter of the sound waves due to the utterances of the speaker's voice, and that the energy of those sound waves is all the force which causes the phenomena which arise when it is in operation transmitting speech, as distinguished from those which are present when it is at rest doing nothing. Will you please state how the energy of the voice applied at the transmitting station is transferred so as to act upon the listener's ear at the receiving station and the nature of the transformation and changes which take place in it during that transfer?

[*Objected to by Mr. Hill as fully explained by Professor Cross in complainants' direct evidence with whose statements upon that point no issue has*

been raised by the defendants; and therefore the evidence sought is not rebutting.]

Ans. The transmitter and the receiver are substantially alike in construction, but the mode of operation of each is the reverse of that of the other. In the transmitter the expansions and condensations of the air impart their mechanical motions to an armature movable within the magnetic field of a constantly magnetized core. This mechanical energy acts to vary the magnetism of the core, and hence the mechanical vibrations of the armature produce what may be termed magnetic undulations in the core. These again produce electric undulations in the surrounding wire, which traverse both the transmitter and receiver giving rise to similar magnetic undulations in the core of the latter. These again act mechanically upon the armature of the receiver and cause it to vibrate, and this vibration is communicated to the air. Thus in this series of operations mechanical force is first communicated to an armature; second, transformed into magnetism; and third, into electricity; fourth, into magnetism again; and fifth, into mechanical energy by which the effect is produced. At each transformation some portion of the energy is converted into heat and lost. Hence the final effect is the result of a comparatively small portion of the initial force by which the apparatus was set in operation.

Adjourned until Saturday, March 31, 1883, at ten, A. M.

MARCH 31, 1883, 10 o'clock, A. M.

Examination resumed.

Present, same counsel.

Q. 7. Was there anything known to electricians, prior to the date of Mr. Bell's patent of March 7, 1876, which would have justified the assumption that the force of sound waves would have been sufficient, or could have been employed to generate electric currents, which in turn could have been capable of causing any mechanical motion and thereby producing any sensible or usetul result?

Ans. In my opinion there was not. Very little was known at that date as to the actual mechanical effects which were capable of being produced by the sonorous atmospheric vibrations accompanying the production of ordinary sounds, such, for example, as those produced by the human voice. Perhaps the only application of this force to produce an

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Ans. In my opinion there was not. Very little was known at that date as to the actual mechanical effects which were capable of being produced by the sonorous atmospheric vibrations accompanying the production of ordinary sounds, such, for example, as those produced by the human voice. Perhaps the only application of this force to produce an

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appreciable result, which was at all well known at that date, was the phonautograph, so-called, in which the vibrations of a membrane, produced by such sound waves, were made to move a bristle over a surface of smoked glass through a very small range of vibration. The power required to effect this was inconsiderable in amount. On the other hand all the different kinds of apparatus then known for the transmission of signals by magneto-electricity, such, for example, as the dial telegraphs of Wheatstone, of Siemens, and of Highton; the needle telegraph of Highton, and the magneto Morse key of Siemens and Halske, required the exercise of a considerable degree of mechanical force upon the armature of the transmitter, in order to communicate a slight movement to the delicate armature or needle of the receiver; the mechanical effect produced at the receiver in each of these instruments being probably not more than one per cent. of that exerted upon the transmitter. In view of the state of knowledge at the date of the patent, it could hardly have been supposed that a magneto-generator, moved by a force no greater than that which served to move the bristles of the phonautograph, would under any circumstances be able to generate an electric current which would produce upon a receiving instrument any effect whatever which would be perceptible to the senses.

Q. 8. Was the Reis telephone an instrument in which the force of the sound waves generated an electric current, or how was the electric energy of that apparatus supplied?

Ans. The electric energy in that instrument was derived from a voltaic battery, and the sound waves simply acted upon a circuit-breaker placed within the circuit of the battery and receiving instrument.

Q. 9. Did you, in the summer, of 1876, form an opinion yourself of the ability of a speaking telephone apparatus to produce sensible results by employing a magneto-transmitter actuated by sound waves; and if so, state what your opinion at that time was?

Ans. I did. I remember that in 1876, while the Centennial Exhibition was in progress, Professor Elisha Gray, of Chicago, called upon me in New York, after having attended the exhibition, and among other things of common interest to us both, he described the speaking telephone apparatus of Professor Bell, which he had seen and examined while there. He made detailed sketches of its construction, and explained its mode of operation to me. I remember that I told him that I did not believe any perceptible effect could be produced by such an apparatus, although I said I had no doubt that the theory of the ap-

paratus was correct, inasmuch as the movements of the transmitting armature, whatever they were, would necessarily generate a current of corresponding character. But I had no idea that any perceptible result, much less a commercially useful one, could be produced. Professor Gray, however, said that he himself had heard words through it, and I remember he said that the words were spoken by Professor Watson, [of the State University of Michigan,] who, to use his own phrase, "bellowed like a bull." Even then I had an idea, which I probably expressed to Professor Gray, that the sounds actually heard probably came through the air. After the publication of some results which were obtained in an exhibition of Bell's apparatus, and after it had commenced to excite some interest in the public mind, I made a drawing from the sketches furnished me at that time by Professor Gray, which was engraved and afterwards published.

Q. 10. What research have you made for the purpose of determining the state of knowledge among electricians, inquired about in the seventh question?

Ans. I was quite familiar at the date mentioned—1876—with the general state of the art upon this class of subjects. At a later date I went over the whole subject with the greatest thoroughness, and made use of every accessible source of information. This research was made while I was employed by the Western Union and Gold and Stock Telegraph companies, and its special object was to inform myself of the state of the art with reference to the telegraphic transmission of vibrations, or as it is sometimes called, harmonic telegraphy.

Q. 11. Did you have any special facilities in the way of books and publications in making this research; if so, what?

Ans. I did. As I have already stated, all the electrical and acoustic literature which could be found in Europe was purchased and brought over mainly for this purpose; and every facility, generally speaking, that I could think of was freely furnished me. And I was provided with a skilled translator, familiar with scientific subjects, to assist me in the work.

Q. 12. In your fifth answer you spoke of a set of telephones which you constructed in 1879, in conformity with Fig. 7 of the Bell patent of March 7, 1876; are those instruments in your possession, or do you know what has become of them?

Ans. They are not in my possession, nor do I know what has become of them. They were made for the temporary purpose of enabling me to ascertain experimentally if a practicable apparatus could be made

in accordance with the Bell patent; and after thus satisfying myself and communicating the results to counsel and the officers of the Gold and Stock Telegraph Company, I had no further use for the instruments; I think they were left at the factory or in the experimental room of the Western Union Company. It is possible, though not probable, that they are still in existence.

Q. 13. Will you please look at the set of telephones now shown you, marked "53" and "54," "C. H. S. Examiner," and at the set of telephones marked "55" and "56," "C. H. S., Examiner," and state whether they are constructed in conformity with the description and drawing of Fig. 7 of Mr. Bell's patent of March 7, 1876?

Ans. In my opinion they are so constructed. Exhibits 53 and 54 contain in addition to the apparatus shown in the patent certain adjustments and adaptations which it is within the province of a skilled mechanic to apply, such as a base or frame for holding the parts together, binding screws for attaching conducting wires, devices for adjusting the distance between the magnet and the armature, and means for straining the membrane. Exhibits 55 and 56 are almost precisely like the drawing of the patent both in size and detail of construction.

Q. 14. Have you tried to transmit articulate speech through these two pairs of instruments with a view to ascertain whether each pair of them does or does not constitute a practically operative speaking-telephone apparatus, capable of transmitting intelligence; and if so, when and where did you try them and with what result?

Ans. I tested both pairs of instruments now before me between two rooms on opposite sides of a court in the building No. 40 State Street, Boston, on the afternoon of the 13th of April, 1882. Prof. Charles R. Cross assisted me in making the tests. We found little or no difference in the results obtained by means of the two sets of the apparatus. Prof. Cross read newspaper extracts which were correctly understood by me without difficulty, especially after I had become accustomed to the peculiar tone of the instruments, which is more hollow than when a metallic diaphragm is used. The articulation was perfectly good and sufficiently loud to be heard in a reasonably quiet place. We carried on a conversation with the greatest ease, using the exhibits in one direction and ordinary magneto hand telephones in the other direction.

Q. 15. Will you please look at the instruments now shown you, which were produced by Mr. Park Benjamin, witness for defendants, and put in evidence on page 1204 of defendant's printed record, as defend-

ant's exhibit, "Bell Telephone, 1876 Patent." Inasmuch as the armatures have been broken away from the membranes, you may also read in connection with them Mr. Benjamin's eighty-fifth and eighty-sixth answers, page 1287, and may also make proper allowance for the fact which is here stated, that the iron frame of one or both of them may have become slightly sprung. Mr. Benjamin testified, in substance, that upon testing these instruments together, and testing each one separately with a Tisdel magneto instrument, he could hear nothing. Will you tell me whether you find anything in the construction of those instruments which would account for such a result; and if so, what is it?

Ans. In my opinion the result is entirely accounted for by the great distance between the armatures and the poles of the electro-magnets. I find the distance in the case of the transmitter to be about one eighth of an inch, as stated by Mr. Benjamin; but in the case of the receiver the distance is more nearly three sixteenths than three thirty-seconds of an inch, which, however, may perhaps be accounted for by rough usage since the tests were made by him. Assuming, however, the distance to be as stated, I should not expect to obtain any perceptible results, unless the armatures were brought much nearer to the magnets. The increments and decrements in the force of the magnetic field, caused by the electric undulations produced by the human voice, are very minute, and the armature, especially a comparatively heavy armature like that of the exhibit, must be brought very close to the pole of the magnet in order to be within the sphere of influence. In other respects the apparatus appears to be properly constructed, although I have found that better results were produced, as a rule, when the apparatus is a little smaller than the exhibit.

Q. 16. What was the practice among the constructors of electrical apparatus, at the date of the Bell patent, with regard to the distance between the armature and the electro-magnet?

Ans. The universal rule is to so place the armature with reference to the pole of the magnet, that it will come as near as possible to it without actually touching it. The means of adjustment more commonly employed is to insert are piece of paper between the armature and magnet, the thickness of which is ordinarily from three to five one-thousandths of an inch, and then to cause the electro-magnet to attract its armature in the ordinary manner of working. The armature is then forced back by an adjustable screw or stop, just far enough to admit the paper to be drawn out. The only exception to this that occurs to me is in the

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case of telegraphic relays, which have their armature placed at some distance from the magnet, thereby obviating the necessity of continual adjustment to the varying strength of the current on long lines, and the difference in the strength of the telegraphic signals from points more and less remote. In apparatus generally the rule is to work the armature in the most intense part of the magnetic field, which is in immediate proximity to the pole or poles of the magnet.

Q. 17. In the cross-examination of Mr. A. G. Bell the defendants' counsel had occasion, in connection with the four hundred and thirty-fourth cross-interrogatory, to state the "ordinary and well-known meaning in the art" of the word "armature"; and he defined it as follows: "I understand it to mean any body or piece of material capable of attraction and repulsion by a magnet, and so arranged in front of the pole or poles of a magnet as to be within the field of force and influenced thereby, or influencing a magnet thereby." Do you consider that to be a fair statement of the ordinary and well-known meaning accepted for that word in the art?

Ans. I do. I think no fault can be found with that definition.

Q. 18. It appears from that definition that a due and proper position of the piece of magnetic metal, with reference to the pole of the magnet, is a part of the definition of the word, and a portion of the meaning which it is well known to convey; did electricians understand that the term implied that meaning in the spring of 1876?

Ans. Certainly; that meaning has always been implied in speaking of an armature as a part of an organized machine; I mean, in contradistinction to a piece of metal in the shape of an armature, but not actually applied to use as such.

Q. 19. Were the rules and practice stated in your 16th answer substantially the rules and practice followed in so arranging an armature in front of the poles of an electro-magnet as to be within the field of force and influenced thereby, or influencing the magnet thereby?

Ans. Yes, that has always been the rule and practice, so far as my knowledge extends.

Q. 20. I find no specific instruction in the patent as to the distance at which the armatures in Fig. 7 are to be placed from the poles of the electro-magnet; and I infer from the testimony of Mr. Benjamin, more particularly on page 1205 and page 1208, that his workman was expected to enlarge the drawing Fig. 7 of the patent "as far as was necessary to adapt it for convenient practical use," and to make the distance

of the armature from the core, when so enlarged, the measure to follow in placing them in the instrument he constructed. Considering the character of that drawing and the ordinary practice of electricians in expressing their ideas of apparatus by drawings, do you think that that was a proper and workmanlike thing to be done by one undertaking to make the apparatus of that patent from the description and drawing found therein? And do you think it was what a person skilled in the art of reading electrical drawings and constructing electrical apparatus from them, should have done, or naturally would have done?

(*Objected to by Mr. Hill, as containing an incorrect statement of the instructions given by Mr. Benjamin to the workman; therefore any opinion based on the question is immaterial and irrelevant.*)

Ans. No. I do not. It is the common and almost universal practice of electricians in making drawings of machines embodying electro-magnets and armatures to exaggerate the actual distance between them, even when the parts are supposed to be drawn to a scale for constructive purposes. The actual distance is so small that it cannot well be represented in a drawing without making the parts appear to be in actual contact, which appearance would serve to mislead the workman, while the exaggeration would not. The drawings accompanying patents are rarely drawn to scale, the design being to exhibit the principle of the apparatus sought to be patented and not its precise construction. The Patent Office does not require drawings to scale, but on the contrary requires them to be coarsely drawn and recommends in their instructions a minimum distance of one twentieth of an inch between parallel lines in order that the drawings may admit of photographic reduction. A workman of even a very moderate degree of skill and experience in the construction of electro-magnetic apparatus, would know that the armature should be placed within the field of the electro-magnet, and in the strongest part of that field, just as he would know that the core and armature of the magnet should be made of iron and not of brass, that the wire of the coil should be made of copper and not of iron, and that it should be insulated before being wound upon the core. All these precautions are necessary in order that the apparatus may operate as designed. They are all matters of common knowledge, which every workman is supposed to know. If a workman should put in a brass armature, which I have known one to do, the necessary inference is that he is not skilled in the art to the extent contemplated by the

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statute. The same considerations are true of various adjustments and attachments which are convenient rather than necessary, and which are usually applied by workman without specific directions, but which nevertheless tend to improve the results obtained from the apparatus.

Recess until 3, P. M.

Q. 21. When you attended the testing of the defendants' exhibits at the office of the People's Telephone Company, at New York, on the 28th, 29th, and 30th of March, 1882, did you examine these two brass cone telephones produced by Mr. Benjamin, and about which you have just been testifying?

Ans. I did.

Q. 22. Did you then observe the iron washer, which is between the heel end of the core of the electro-magnet and the wrought-iron bent piece that carries it, in that brass cone transmitter?

Ans. I did.

Q. 23. What is the purpose or office of that washer in that instrument?

Ans. I judge that the workmen after having forged the heel-piece, and fitted the core and armature to it, desired to reduce the distance between the pole of the core and the armature, and inserted the washer to save himself the trouble of making a new core. The effect of the washer is to extend the pole towards the armature a distance corresponding to its thickness. It is a common expedient for the purpose, and constitutes a rough method of adjustment.

Q. 24. Is that a device by which the instrument can be adjusted while in operation, or does it require, in order to make a change, that the operation should stop, the instrument be taken to pieces, and then be put together again, with the washer either omitted or replaced by one of a different thickness?

Ans. The instrument cannot be adjusted by this means except by taking it apart, but in an instrument of this kind it is only necessary to adjust it once for all, at least so long as it is to be used under practically like conditions, by which conditions I mean length of line or strength of battery.

Q. 25. You stated in your twenty-third answer that it was used in this instrument in order to reduce the distance between the pole and the armature. If the workman in constructing this instrument and in putting it together had desired to reduce that distance still more, could

he have done it by putting in a thicker washer instead of the one now there?

Ans. Certainly; there was nothing to prevent him from doing so.

Q. 26. Will you state how the core of these two brass cone instruments is secured to the bent iron heel-piece?

Ans. By means of a flat-headed screw which passes loosely through the heel-piece and the washer, and enters a screw hole formed in the axis of the core. When it is screwed home it binds all the parts together.

Q. 27. When you examined these instruments in March, 1882, what judgment did you form as to the propriety of the distance then found between their armatures and their cores?

Ans. I thought then, as I do now, that the armatures were too far away to permit of the operation of the apparatus.

Q. 28. Please look at the dimensions of the armatures of these brass cone instruments, and state your opinion as to whether the size is suitable and as to whether they indicate that a maker of electrical apparatus, who should select such armatures, was a man who would have been reckoned skilled or unskilled in his art, as it existed in the spring of 1876?

Ans. The armatures are much heavier than sound judgment would dictate, especially in view of the character of the forces by which they were designed to be operated. The breadth of the armatures is about twice the diameter of the cores, whereas the ordinary and proper rule is to make their breadths exactly equal to that of the face of the core. In addition to this it is a well-known rule in the construction of this class of apparatus to make armatures designed for rapid movements or vibrations as thin and of as little weight as possible without sacrificing too much attractive force. Thus the armatures of automatic or fast speed telegraph instruments are made much thinner than those of hand-worked instruments of like character, while the armatures of railway signal apparatus, which is only required to move slowly, are frequently made with a cross section equal to that of the core, which is the proportion theoretically best to obtain the maximum lifting power of which the magnet is capable. I therefore conclude that the workman who constructed these instruments had not had much experience in making electrical apparatus, and could not be properly regarded as a skillful workman in that line.

Q. 29. Are these defects in the size of the armatures injuries merely,

or are they, in your judgment, sufficient to prevent the transmission of speech by means of the instruments?

Ans. I do not think that the weight of the armatures would prevent the transmission of speech, but would rather tend to render the articulation indistinct. Sounds of high pitch would be transmitted with more difficulty than if the armatures were lighter, and the results, as a whole, would probably be considerably less perfect.

(*Complainants' counsel puts in evidence copies of all the notes of the tests of Drawbaugh exhibits mentioned on page* 1339, *defendants' printed record, the said tests being tests of Drawbaugh exhibits, made at the office of the People's Telephone Company, at New York, on March* 28, 29, *and* 30, 1882, *in the presence of both parties, the said papers to be marked "Complainants' Exhibit. Notes of Tests of Drawbaugh Exhibits."*)

Q. 30. Did you, at the request of the complainants, attend the tests of defendants' instruments which are mentioned on pages 1296 and 1297 of defendants' printed record, and which took place on the 28th, 29th, and 30th of March, 1882?

Ans. I did.

Q. 31. On those days there were tested certain instruments alleged to have been made by Mr. Drawbaugh as original instruments before this suit commenced, and also instruments made since this suit commenced and for the purposes of this case, and alleged to be reproductions of instruments made before the suit began, and produced and put in evidence in a more or less perfect or fragmentary condition; I wish you to compare some of those instruments which are alleged to be originals with the instruments styled reproductions, and point out the differences, if there are any of any importance, which exist between them. Please compare the instrument marked "F," and the instrument marked "F reproduced," in answer to this question.

Ans. Both these instruments are shown in Mr. Knight's drawings now before me, and I will refer to them by the letters of reference in my answer. *First.* The mouthpiece B of "F reproduced" is of a more modern and very much better form than that of F. It is so shaped as to converge the sound vibrations directly upon the center of the diaphragm, and the latter is closely covered by the mouthpiece forming a shallow chamber, which experience has shown acts to prevent interfering vibrations, and improves the clearness of articulation. In instrument "F," the mouthpiece enlarges to the full size of the diaphragm,

which acts to diffuse the sound words and to produce interfering vibrations.

Second. The shallow plate of cup *D*, which holds the carbon powder, is supported in "F reproduced" by two rods or wires *F F* at opposite points of the circumference, which maintains it much more firmly in position than is possible with the single rod *c* attached at one edge of the cup of "F."

Third. "F reproduced" has a metallic diaphragm which is practically far superior to the membrane diaphragm said to have been used in "F." The latter, after continuous use for fifteen or twenty minutes, alters its tension by reason of the moisture condensed upon it from the breath of the speaker, and is thus temporarily put out of adjustment. Even in its best condition its articulation is not nearly so good as that of the metallic diaphragm.

Fourth. The tumbler of "F reproduced" is an unbroken one and stands solidly upon its support, while that of "F" is broken away at the bottom in such a manner that it is insufficiently supported, and is shaken by the slightest jar. These are the essential differences that I observe between the two exhibits which would affect the performance of the apparatus.

Q. 32. It has been stated in the evidence that different powders used in the cup gave considerably different results. Is there anything in the instrument "F" as it now exists that indicates what kind of powder was used in it?

Ans. The tumbler of "F" is lined with a coating of plaster of Paris. I have examined this with great care, but have not been able to find anything which would enable me to determine what kind of powder has been used in it. The coating is cracked and broken away in many places, but I have found no remains of powder in any of these cracks.

Adjourned until April 2, 1883, at ten, A. M.

APRIL 2, 1883, 10, A. M.

Examination resumed.

Present, same counsel.

(*Witness states that he desires to make a correction in his testimony, and proceeds as follows:*—)

In reading over the printed copy of my deposition this morning I find that in my answer to question 2, page 1287, I stated that my investiga-

tion of the subject of speaking-telephones was made in 1878, whereas in fact it was made 1877. In the first half of the month of August, 1877, President Orton directed me to make the investigation, stating that the telephone seemed likely to be an invention of much commercial importance, and in that case it would be very important that the Western Union Company should acquire the right to use it. The results of my investigation were reported to him verbally from time to time, but were not completed until the close of the year. During the latter part of the year 1877 the Western Union and Gold and Stock Telegraph Companies acquired rights under the patents of Gray and others, and in December organized the American Speaking Telephone Company, in the stock of which they retained a controlling, interest for the purpose of carrying on the telephone business. Not more than one or two months elapsed after my return from Boston, spoken of in my answer to question 2, and the date of President Orton's conversation with me.

Q. 33. As the result of the study and investigation referred to, did you come to the conclusion that Mr. Bell's patent of March 7, 1876, was a valid patent for the speaking-telephone, or did you come to the conclusion that it was not a valid patent for the speaking-telephone?

[*Objected to by Mr. Hill, as incompetent and immaterial.*]

Ans. I was entirely unable to discover any apparatus or method anticipating the invention of Bell as a whole, and therefore concluded that the patent was valid and so advised my employers.

Q. 34. I now return to the subject matter which was under inquiry before adjournment. It has been stated that the tumbler of instrument "F" originally was whole, the bottom not being broken off; that water was placed in the bottom, not high enough to reach the plates *D* and *E*, but still in such a manner as to moisten the powder or "low conductor" placed between those plates and keep it moist. Suppose water to be so provided in such a tumbler with the bottom on, a bladder or other animal membrane stretched over the top of the tumbler and then the instrument talked to through the hole in the wooden cap *B*, or through another cap which had a still smaller hole and more confined air space, what effect would the moisture of the water below the membrane and the moisture of the breath above it, have on the ability of the membrane to perform the functions of a diaphragm in a speaking-telephone?

(*Objected to because the witness does not appear to have made any experiments upon the subject or to have any special knowledge qualifying him to testify as to the practical effect of said arrangement.*)

Ans. I found in my experiments with the transmitter constructed according to Fig. 7 of the Bell patent, and in which the membrane is freely exposed to the air on one side and merely surrounded by an open cone on the other, that after speaking to it constantly for ten or fifteen minutes the membrane absorbed sufficient moisture from the breath of the speaker to render it flabby, or in other words, to cause it to lose its elasticity to such an extent as to be incapable of performing its function properly. When covered with a mouthpiece having only a small opening in front and behind it an inclosed vessel containing water, the same effect would necessarily be produced in a much shorter time—in fact almost immediately, because the membrane would be wholly excluded from the surrounding atmostphere and all evaporation therefrom prevented.

Q. 35. If the condition of the air inside a closed tumbler, (as "F" would be if it had a bottom on,) were such as to effectively moisten and keep damp the powder inclosed between the two zinc plates *D* and *E*, would it or would it not be such as to moisten and keep damp an animal membrane closing the top of the tumbler and surmounted by a cap-piece like *B*?

Ans. Such a condition of the air within the tumbler would necessarily moisten the membrance and greatly lessen its elasticity.

Q. 36. Please examine the two instruments marked defendants' exhibit "B" and defendants' exhibit "B reproduced," and indicate what differences you find between them capable of affecting the practical efficiency of the machine, so far as the parts that remain on instrument "B" enable you to do so. You may aid your explanation by reference to Mr. Knight's drawings, concerning which I will state, at the request of respondents' counsel, that the tin box *B* of "Exhibit B" drawing is obviously farther from the electro-magnet than any one would have placed it in practice, it having apparently slipped under the retaining tin strap *C* and been drawn by Mr. Knight in the position it happened to be on June 3, 1881, when he made the drawing. I will further state that the tin box of "B reproduced" was entirely coated inside with plaster of Paris, and that most of the plaster of Paris lining existed inside of "B" when it was first marked for identification in this cause.

Ans. The armature of "B" is absent and also the membrane or diaphragm, although fragments of the latter remain where it was secured to the tin can *B*. The only differences which I note which would materially affect the use of the instrument are as follows: The tin can of

"B reproduced" is more firmly secured to the base of the instrument and is therefore less likely to become accidentally displaced while in actual use than that of the original. The metal band or strip *C* which secures the tin can to the base is one and one eighth inches in breadth in "Exhibit B" and is secured to the base by one tack driven through it at each end. In "Exhibit B reproduced" the corresponding band is rather more than one and five eighths inches in breadth, and is secured at one end by one tack and at the other end by one tack and one screw. The base-board in "Exhibit B" projects about four inches beyond the mouth of the tin can, thus rendering it quite inconvenient to place the ear in close proximity to the mouth of the can. In "B reproduced" it appears from the drawing of Mr. Knight that the base-board projected to about the same distance, but in the "Exhibit B reproduced" now before me, the projection of the base is only about an inch, the base apparently having been sawed off, thus remedying the inconvenience spoken of. The electro-magnet of "B reproduced" is of more finished construction than that of "Exhibit B," and the ends of the poles are the full size of the cores—about one-fourth of an inch—while those of "Exhibit B" are reduced in size and terminate in a rectangular face whose vertical breadth is about three sixteenths of an inch and whose horizontal breadth is about three thirty seconds of an inch. I do not consider, however, that the difference in the electro magnets would have any important influence on the performance of the respective instruments.

The tapering spring *G* appears to be stiffer in the reproduction than in the original. I do not observe any other essential differences, although the electro-magnet of "B reproduced" is mounted upon a series of three blocks of different thickness placed one above the other, while in this respect Mr. Knight's drawing represents a support similar to that in "Exhibit B," consisting of a single block of wood of the proper thickness, to which the electro-magnet is clamped.

Q. 37. In attempting to use as a speaking-telephone receiver the instrument "B reproduced" is it an advantage of any importance, or not, to be able to press the open end of the tube closely to the head, so as to enclose the ear?

Ans. It is of very great importance, especially when the sounds are weak and difficult to distinguish, for it is only by pressing the opening of the tube closely to the head, so as to inclose the ear, that external sounds can be excluded; and it is well known that the faintest external sound is sufficient to overpower the sounds heard in the telephone when

the latter are very weak, although they can be heard quite well if these external sounds are cut off.

Q. 38. Do you think that a man possessed of reasonable intelligence and a handsaw, would have used "B" as a speaking-telephone receiver constantly for five years, and would, during the same time, have had other people frequently listen at it, without sawing off the end of the base-board, as the person who desired to use "B reproduced" did?

(*Objected to as incompetent, argumentative and leading.*)

Ans. No, I do not; I think that if a person using B as a receiver should hear any sound whatever in it, in its present condition, the first thing he would do would be to saw the base off, so that he could apply the tube closely to his ear and thus hear the sounds more distinctly.

Q. 39. State whether or not, in your opinion, the constructor of an instrument like "B" could have had it in constant experimental use as a telephone receiver for five or six years by himself and frequently used for the same purpose by farmers and others unaccustomed to the careful handling of apparatus, without discovering and attempting to remedy the difficulty of the tin box slipping on the board under its flimsy mode of attachment which you have referred to.

(*Same objection, and further objected to as assuming that the instrument was always in its present dilapidated condition in respect to the said attachment.*)

Ans. It is very difficult for me to believe that such could have been the case, inasmuch as it is not possible to fasten the tin can by the means made use of in the exhibit so firmly as to prevent its being more or less shifted in position by careless handling; and the smallest degree of movement would be sufficient to affect the operation of the instrument.

Q. 40. It appears from Mr. Benjamin's deposition, defendants' record, page 1307, that the accident of a slight slip of the tin can of "B reproduced" occurred during the short time that that instrument was in use during the tests in New York, in March, 1882, and necessitated a readjustment of the instrument; was that the fact?

Ans. I heard Mr. Benjamin say so at the time.

Q. 41. State whether or not, in your opinion, a man would have gone on for five or six years constantly using the instrument "B" as a telephone receiver, and causing it to be used by many others, keeping it all the while on a bench or table and bending over, bringing the ear near to it, and taking scrupulous care not to touch the tin can with the head, and without ever taking it in the hand, or attempting to hold it to the ear.

[*Objected to as incompetent, argumentative, leading and assuming.*]

Ans. I can only say that I think it extremely improbable.

Q. 42. If you add to the conditions of my last question the further statement that the alleged use was not in one place alone, specially arranged for the purpose, but was in many and different parts of a building, where no special facilities for the support of the instrument were provided for the purpose—does this add to or diminish the improbability you have mentioned?

[*Same objections.*]

Ans. It increases the improbability, if possible.

Q. 43. If after you had placed the tin can with a bladder and attached armature on the base-board, had put it at the correct distance from the electro-magnet, and strapped it there with the tin strap fastened with the two tacks, the membrane had been eaten off by mice, or otherwise accidentally destroyed, so that it became necessary to put on a new one, could you, or could you not do that without taking the can off from the board?

Ans. I am not sure that it would be absolutely impossible to replace the membrane without taking the can off the board, but I do not think there is the slightest probability that any person would ever attempt to do it in such a way.

Q. 44. Suppose—for the moment—that the tin strap were tacked down so tight that the tin can could not slip, and therefore of course could not be drawn out from under the strap, especially with the end enlarged by the string which tied down the bladder, do you see any way in which you could get it off without removing or loosening the tin strap; and if so, what? and if you once loosened the tin strap for that purpose, how tightly could you fasten the tin strap again by driving the two tacks into the same holes?

Ans. It could not easily be done, although it is barely possible that the side of the can next the base could be sprung inward sufficiently to allow the diaphragm and string to be taken out. If, however, the strap were once loosened it could never be replaced so as to be as firm as before, unless the tack were driven in a new place.

Q. 45. Please examine the instrument and state whether or not you can detect more than one set of tack-holes, or can detect any indication that the strap has been moved from time to time and fastened in different places?

Ans. I have examined the instrument and, in my opinion, the strap has never been taken off since it was first put on. There are no indications visible of more than one set of tack-holes, and no indication of looseness of the tacks themselves, which would almost certainly appear if they had been redriven into the same holes after having been removed. If any tool had been used to pry out the tacks the marks of it would certainly be apparent either upon the tin strap or the wooden base; but I find no indications of such marks.

Q. 46. Suppose that the tin can had, for the purpose of removal, been flattened on the under side, as you suggest, sufficient to allow the end with the cord, or even the end with the rib to be drawn out, and afterwards replaced, could you then even bend the can back again after it was newly strapped so as to hold it with a sufficient tightness to prevent any slipping?

Ans. I hardly think it probable; none of the fastenings are very rigid, and it would be difficult to apply any degree of force or pressure to any part of the can without rendering it more or less loose in its fastenings.

(Recess until 3, P. M.)

Q. 47. Suppose the tin can of instrument B had been lined with a coating of plaster of Paris from one sixteenth to three thirty seconds of an inch thick, as stated in Mr. Knight's drawing, and you had bent the tin can, as suggested, for the purpose of taking it out to put on a fresh membrane, and then bent it back again into shape after replacing it—what sort of effect would such treatment, together with the handling of the instrument as a receiver—the whole running through a series of years—have upon the plaster of Paris lining?

Ans. It would undoubtedly fracture it and thus render it liable to be broken away by a very moderate amount of handling or jarring; the plaster does not adhere to the tin to any extent, but maintains itself in position mainly by reason of its arch-like form. The bending of the tin can forward and back would certainly crack the plaster shell, and afterwards it would be very easily broken even by slight shocks.

Q. 48. Please compare the instrument marked "C reproduced" with the instrument marked "C," and indicate what differences you find, if any, affecting the efficiency of the instrument, so far as you can judge from the parts which now exist in "C"?

Ans. The only parts remaining of the original "C" are the base, the mouth-piece, the diaphragm and the armature. "C reproduced" has in

addition to these an electro-magnet and a compound horse-shoe permanent magnet, each separately clamped to the base. The mouth-pieces of the two instruments are practically alike. The metal diaphragm of original "C" is very much crumpled or buckled, a condition which I do not find in "C reproduced," which has a smooth metal diaphragm in very good condition. I do not see any indication whatever that the permanent magnet of original "C" was ever secured to the base or frame in any way, and I do not think that a permanent magnet ever was so secured to it The base-board of original "C" was a weather-beaten piece of wood when the upright standard was first attached to it, and appears to have formed a part of a shelf or similar structure. I notice that some of the wrinkles or corrugations in the diaphragm of the original "C" extend over the edge, indicating that they existed in the metal plate before its edges were bent over the rim of its supporting ring to form a diaphragm.

Q. 49. There is in instrument "Reproduced C" a block of wood upon the rear portion of the permanent magnet marked *G*', in Mr. Knight's drawing. Is there any screw-hole or nail-hole at the corresponding part of the base of "C" by which such a block could have been attached to the base of "C"?

Ans. There is not; there is not the slightest indication that such an attachment ever existed.

Q. 50. In instrument "C reproduced" there is now a clamping screw which holds the permanent magnet to the base. No such contrivance is shown in Mr. Knight's drawing; Mr. Benjamin stated in his deposition that he put it there in order to more conveniently use the instrument in the New York tests without dropping off the permanent magnet; and this action on his part was entirely unobjectionable, and it appears to me quite natural. Remembering that the permanent magnet on "C" did not come so near the front of the frame as it does on "C reproduced" will you please state whether you find in the base-board of "C" any screw-hole by which the corresponding magnet on "C" could have been likewise clamped to the base?

Ans. I find one screw-hole which, within the bounds of possibility, might have been made by a screw employed for this purpose, but it is so far towards the front of the instrument that it could only have clamped the permanent magnet at the extremity of its poles, which arrangement would not have served to fasten it with any great degree of security; I do not think the hole was made for that purpose.

Q. 51. It appears to be clear, then, that in the instrument "C" the heavy permanent magnet was itself unclamped, and that most of its weight rested near the rear end, on a propping block, also loose and unsecured. Do you think that a man would have used that instrument much, or during many years without some means of holding that permanent magnet in place, supposing him to have been a man of reasonable inventive ability, capable of getting up such an instrument in the first place and a good mechanic?

[*Objected to as incompetent, argumentative and leading.*]

Ans. I cannot conceive that he would have used it in that way more than once. The very first trial of the instrument would have demonstrated the necessity of securing its parts in their proper relative positions.

Q. 52. Please look at the instrument "I reproduced," which was used in the New York tests and which is shown in Mr. Knight's drawing marked "Reproduced Instrument Marked I, Harrisburg, July 22nd, 1881," and compare it with instrument "Exhibit I" as shown in Mr. Knight's drawing entitled "Instrument marked I, Harrisburg, April 28, 1881," and state the differences that affect the operation of the machine.

Ans. Instrument "I" as represented in Mr. Knight's drawing, consists simply of a shell or case turned out of wood in a cylindrical form. None of the operative parts other than the mouthpiece remain. "Exhibit I reproduced" has a metallic diaphragm, an armature attached thereto by a single rivet passing through its centre, and an electro-magnet, the cores of which are permanently polarized by two horse-shoe permanent magnets with their like poles placed in conjunction.

Q. 53. Will you now compare "Exhibit I reproduced" with instrument marked "I one form" shown in Mr. Knight's drawing of July 12, 1881, and state what differences you find affecting the efficiency of the instrument?

Ans. Instrument "I one form" has an ordinary non-polarized or neutral electro-magnet, while "I reproduced" has a polarized electro-magnet, as before stated. Instrument "I one form" has two metallic diaphragms in close proximity, separated by a paper ring or gasket; the armature is riveted to the lower diaphragm; and the upper diaphragm is perforated by four circular openings each of about the same

diameter as the core of the magnet; "I reproduced," as before stated, has a single metallic diaphragm.

The polarization of the cores increases the efficiency of the instrument in a marked degree, even when a battery is included in the circuit, and is essential in case the battery is to be dispensed with. The additional diaphragm of "I one form" can serve no possible purpose except to interfere in a greater or less degree with the normal operation of the instrument.

Q. 54. Please compare Mr. Knight's drawing of instrument marked "I one form" with the instrument marked "I," and the works that are now in it—having been placed there since it was first marked—and state what differences, if any, you there find.

Ans. I do not find in the instrument the perforated diaphragm shown in the drawing. The instrument has a wooden ring in place of the ring E^4 of the drawing, which the reference in the drawing says is of paper There is a metallic diaphragm in the instrument like the diaphragm *E* of the drawing, to which the armature is attached as shown in the drawing.

Q. 55. Will you compare the electro-magnets which are now in the instrument marked "I" now before you with the electro-magnets in instrument "I reproduced," and state what difference there is between them and whether that difference tends to make "I reproduced" less efficient, or more efficient than "I?"

Ans. The spools or coils of wire upon the instrument "I" are about one and three-quarter inches in length, being about a quarter of an inch longer than those of "I reproduced;" they are one and seven-sixteenths inches in diameter in "I," being about a quarter of an inch greater than those of "I reproduced." The cores of instrument "I" are two and one-eighth inches in length, a quarter of an inch longer than those of "I reproduced." The wire in coils of "I" is twenty-five thousandths of an inch in diameter, while that of "I reproduced" is only fifteen thousandths. Taking the size of the spools into consideration this would give at least twice as many convolutions in the coils of "I reproduced" as there are in the coils of "I." All these differences tend to a greater or less degree to increase the efficiency of "Reproduced I" as compared with "I." The shorter the cores of the magnet the more strongly it responds to rapid vibrations; while the use of a thinner wire enables a greater number of convolutions to be placed within an effective distance of the core and thus increases the magnetic intensity. It is a well-

established law that the magnetism developed in a core by a current, other things being equal, is directly in proportion to the number of convolutions of the conductor around it. And the same law holds good in relation to the inductive action of a core in producing electric currents in the surrounding conductor, one of these actions being the reverse of the other.

Q. 56. I now call your attention to the tests which were asked for on pp. 1295–6 of the defendants' record, and which took place in New York on March 28, 29, and 30, 1882, as stated on pp. 1296–7 of defendants' printed record; on which it appears that you were present during the whole of them, and that they occupied fifteen or sixteen hours of the three days; please state which side took general charge of the performance and selected the instruments to be tested?

Ans. The tests were so far as I am aware—and I was present during the whole time—conducted solely under the direction of the defendants, though I presume that any special tests or experiments requested by the complainants would have been made; and I, think, in fact one or two were so made.

Q. 57. Please state where those tests were made and the condition of the premises, as to freedom from disturbance, while the tests were going on.

Ans. The tests were made at No. 4 East 14th street, in New York City, in rooms which I understood to be offices of the defendants, or some of them. This part of 14th street is a very quiet neighborhood, being traversed by but few heavy wagons. The side-walk is very broad, the front of the building being twenty or twenty-five feet from the roadway. The building in which the experiments took place appears to have been originally a first-class dwelling-house, and has been converted to merchantile uses without material alteration. The floors, partitions and wood-work are of substantial and solid construction. The rooms in which the experiments were made were on the second floor, or first floor above the street. A rear room was used as the transmitting room, from the door of which a hall forty or fifty feet in length extended towards the front of the building, in front of which hall was a small room perhaps ten or twelve feet square, communicating with it by a door, and originally designed for a hall bed-room. This room had one window looking out on 14th street, and provided with a closet on its inner side opposite the window, the sole entrance to which was closed by a thick door. The adjacent front room was occupied as the

show-room of a millinery establishment, and the room between that and the rear room, as a photographer's reception-room. The small front room and the two adjacent rooms were carpeted, the hall and stairs were covered with matting, and, I think, there was some covering upon the floor of the rear room. The conducting wires were led from the rear or transmitting room, through the hall into the front room on 14th street and thence into the closet, in which the receiving operator and instrument were placed. While receiving, the window on Fourteenth street and the door of the closet were both closed; no one was permitted to speak or move about the floor in the front room while the experiments were going on, and it was very seldom that any disturbing noise was made by the occupants of the adjacent rooms upon the same floor. Altogether, the conditions were as favorable as could well be found in the city.

Q. 58. What was the effect upon the success of receiving, the operator being stationed in the closet opening into the front room, when anybody moved across the floor of the front room or whispered in it, or when anybody went up or down stairs or when the door of the closet was opened?

Ans. It was impossible for the operator to hear anything when the closet door was opened. No attempt was made to do so during the three days except once or twice; and in each case nothing whatever could be heard until the door was closed again. With many of the instruments on trial even whispering in the front room was sufficient to prevent the operator from understanding what was said and even the lightest footsteps of a person upon the carpet of the front room or passing up and down stairs through the hall or walking about in the milliner's room, would drown the sound of the receiving instrument and prevent the operator from understanding what was said.

(Adjourned until April 3, 1883, at 10 A. M.)

APRIL 3, 1883, 10, A. M.

Examination resumed.

Q. 59. Please state what special precautions were taken in the transmitting room to prevent any disturbance of any kind during the trials of the battery transmitters especially.

Ans. On the first day of the experiments the battery transmitters were placed on a long office table of substantial construction, and great care was taken to prevent any accidental jostling or jarring of the table. The

instruments were spoken into by the transmitting operator without touching them, except for purposes of adjustment. These precautions, however, were shown, by the results of the first day's experiments, to be insufficient, and, subsequently, the transmitter "F reproduced" was set upon a block of artificial stone of, perhaps, a cubic foot in dimensions and correspondingly heavy, which was placed upon the table referred to, the same care as before being taken to prevent persons moving about the room from jostling the table. Transmitter "H" was also firmly screwed to the casing of a window in the rear wall of the building, so that no vibration could possibly be communicated to it by the movements of persons within the room.

Q. 60. Was there any precaution taken that no one should touch the table on which the instruments were placed or walk on the floor on which the table rested?

Ans. Yes; Mr. Marx and others of the defendants repeatedly cautioned the inmates of the room, from time to time, not to lean against the table in any way, and to walk about the floor, when necessary, as softly as possible. Once or twice he made the remark that the slightest jar upsets the instrument.

Q. 61. Did these precautions to prevent any mechanical jars from reaching the battery transmitters "F reproduced," "O" and "H" appear to be unnecessary, or were they needed for the attainment of such results as were attained?

Ans. They appeared to be very essential in the case of "F reproduced" and "H," especially the latter. I was in the transmitting room a very small part of the time, if at all while "O" was being used, and cannot speak positively as to that instrument. The absolute firmness and stability of the transmitters aided materially in maintaining their very delicate adjustment after it had once been reached. The adjustment was lost instantly in case the instrument was jarred or shaken.

Q. 62. It appears from the notes of the tests that substantially all the listening was done by the defendants' expert, Mr. Benjamin, his place being occasionally supplied for a few minutes by yourself and Prof. Cross, and some other of the experts present. Will you give me some idea of the difference between the ability of an expert in 1882 to hear speech through a telephone, as compared with the ability to hear it and understand it possessed by one who listens to a telephone for the first time in his life, especially if he be an uncultivated and untrained person like a country farmer?

Ans. It is almost impossible to overstate the great difference that exists between the ability of a skilled and an unskilled person to understand words and sentences, or even to appreciate sounds in a receiving telephone. I well remember that I myself, on listening to a telephone for the first time, was at first unable to distinguish even a sound, but after a little practice was able to do so, and, as it were, differentiate the telephonic sounds from the extraneous noises which at first overpowered them. Afterwards I was able to distinguish words and phrases of frequent and common use, and, finally, complete sentences. I have found my own experience to be corroborated in most cases by that of other persons to whom I have shown the apparatus for the first time; and among a number of farmers and other country people, my neighbors, to whom I have given an opportunity of listening at the telephone, there were at least two of ordinarily good hearing, who declared that they have never been able to distinguish anything like articulate speech. There is a very marked difference in the ability to perceive these faint sounds between persons who are accustomed to use their faculties in making careful discriminations in the course of their ordinary occupations and those who are not. A person accustomed to scientific pursuits ordinarily has much more acute perceptions of slight differences in all kinds of things than country persons engaged in farming or ordinary mechanical labor. The difference lies as much in the mental as in the physical organization, and in my opinion, much more so. It is very difficult for any one who has not had experience in the matter to realize how great the difference really is between these two classes of people in respect to the uses of the telephone.

Q. 63. Were the instruments which you mentioned in the preceding answer as being listened at by you mere experimental instruments, or were they instruments in actual commercial use by others at the time?

Ans. The instrument listened to by myself was one of the first lot that were put in commercial use; the one which I showed my neighbors was the ordinary commercial instrument now in use everywhere.

Q. 64. It appears from the notes of the New York tests that Mr. Hill and Mr. Drawbaugh had especial charge of the instruments in the transmitting room, and that Mr. Hill did much of the talking on the first day, and most of it on the second and third days, so that the testing line was equipped with a skilled and intelligent operator at the transmitting end and also at the receiving end. Will you state what advantage it is, if any, to have such an operator at the transmitting end, irrespective of who listens and also what advantage it is, if any, to have such operators at both ends

of the line, comparing the condition of things thus stated with that which would exist if one or both of these operators or attendants had been replaced by an entirely unskilled person, such, for instance, as a country farmer?

Ans. It is a very great advantage in the transmission of articulate speech by means of a telephonic apparatus of any kind, that the speaker or transmitting operator should possess a strong and even voice, and that he should articulate his words distinctly. These advantages are of paramount importance when a battery transmitter having a delicate and narrow range of adjustment is employed, for the reason that the voice must be adapted to the condition of the instrument in order to secure the best possible results. In other words, the speaker should be able to modulate his voice until exactly the right degree of loudness or force is reached, and thereafter to maintain it precisely at that point. So, also, he should be able to place and thereafter maintain his mouth at the proper distance from the mouth-piece. The advantages which arise from having a skilled operator at both ends of the line are very important when a battery transmitter of great delicacy and having a very narrow range of adjustment, such as those used in the New York tests, is employed. If the receiving operator is familiar with the characteristics of the transmitter and the principles of its operation and is provided with means of conveying intelligence back to the transmitting operator, he can render him great assistance, not alone in effecting the proper adjustment of the apparatus, but in maintaining such adjustment after it has once been reached. He can at once recognize any deviation from the proper adjustment of the transmitter, and instantly determine the character and cause of such deviation, and can direct the transmitting operator to increase or diminish the pressure between the electrodes, to speak in a lower or softer tone, or to increase or diminish the distance of his mouth from the transmitter; or he may do what amounts to the same thing—indicate the character of the sounds heard by him in such manner that a skilled transmitting operator would himself be able to regulate his instrument, his voice, or his distance from the instrument in accordance therewith. In this way two skilled operators familiar with the apparatus might be able to transmit words or sentences with comparatively little difficulty, while an unskilled operator at the receiving end would be unable to give any definite information whatever to the transmitting operator in case of a failure of adjustment other than perhaps to say that he couldn't understand anything. Hence if one or both of these attendants were replaced by ordi-

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nary unskilled persons, such as farmers or laborers, the difficulties of intelligible transmission would be enormously increased.

Q. 65. You have referred to the means of conveying intelligence back from the receiving to the transmitting operator, as an arrangement necessary to secure the advantages mentioned in your last answer; were such means provided in the New York tests, and what did they consist of?

Ans. About two hours after the tests had commenced, on the first day, an independent, or, as it was called, "tell-tale" line was put up between the transmitting and receiving rooms and equipped with Bell hand magneto-telephones, which were used both for sending and receiving during the subsequent progress of the tests. I believe that once or twice other instruments were substituted for one of the Bell telephones. Instrument "E" was used for this purpose on the last day, and possibly the Tisdel instrument, though I am not sure about the latter. The tell-tale line was put up at the suggestion of Mr. Storrow, of complainants' counsel, for the purpose of informing the other observers in the receiving room (not the operator) what particular tests were to be made, and giving other necessary information, and also for enabling the observers in the transmitting room to know from time to time what results were attained. Before it was put up a messenger had been employed to pass backward and forward between the two rooms for these purposes, but that plan was found inconvenient and wasteful of time. During the remainder of the time in which the tests were going on, the tell-tale line was also used for facilitating the adjustment of the instruments undergoing test, in the manner indicated in my last answer.

Q. 66. In the first part of your 64th answer you have referred to the important advantages of the operator having a strong and even voice, distinct articulation, skill to modulate his utterances to the right degree of force, and maintain them there, and to place his mouth at the right distance from the mouth-piece of the transmitter; did Mr. Hill possess any peculiar advantages in this respect?

Ans. Yes; I think I may say that Mr. Hill possessed every necessary qualification to enable the best possible results to be obtained with the apparatus used. He had a strong, clear, and well-modulated voice. His enunciation was faultless and he furthermore exhibited great skill in adapting his voice and position to the conditions of adjustment in the transmitter from time to time, as the necessity therefor was indicated by the character of the results at the receiving end. He also possessed the ability to maintain his voice at any required degree of loudness for a

considerable length of time, as well as to preserve an exact distance between his mouth and the instrument.

Q. 67. In the case of the battery transmitters "F reproduced" and "H" which you say you particularly observed, did you notice any difference between the results produced when Mr. Hill spoke into the transmitter and those produced when others spoke into the transmitter; and if so, give me some idea of what those differences were.

Ans. I did notice a very marked difference in the case of these two transmitters, which difference was perhaps more noticeable in the case of "H" than in the case of "F reproduced." Upon one occasion Mr. Drawbaugh attempted to transmit a newspaper paragraph by means of instrument "H" and succeeded in rendering a portion of it understood, after very numerous repetitions of words and sentences, but finally abandoned it, saying: "They can't understand me; I might as well give it up" or words to that effect. Mr. Klemm also tried it with very much the same result. Yet when Mr. Hill spoke into the instrument, the adjustment being the same, comparatively little difficulty was experienced in understanding everything that he said, so long as the instrument remained in adjustment.

Q. 68. It appears that during these tests the best modern forms of magneto instruments, such as the Bell "butter-stamp" magneto hand telephone now in ordinary use, and, occasionally, I believe, the Tisdel magneto instrument, were used at one end of the testing line in connection with a Drawbaugh exhibit at the other end, for the purpose of adjusting the Drawbaugh exhibit, or as a prelude to the use of two Drawbaugh instruments on the testing line. Was such possession and use of the modern instrument of any advantage as regards results subsequently obtained with two Drawbaugh exhibits; and, if so, what?

Ans. Yes; I consider such use as of very considerable importance. The modern magneto instruments may be regarded as a standard form of apparatus always giving the same, or nearly the same, results under like conditions, and not liable to sudden changes of any kind. Hence when such an instrument is coupled with another instrument, for the purpose of testing or adjusting the latter it is certain that any alteration in the performance of the couple will be due to the instrument undergoing adjustment, and that its cause must be looked for in that instrument. On the other hand, if an attempt is made to adjust one instrument of a pair or couple, both members of which are liable to change, and in which any change occurring in one instrument will equally affect the performance

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of both, it will obviously be very much more difficult to locate and to eliminate any disturbing condition. This has been found to be the case in practice, and in fact it is one of the essential requirements of any test, that all the conditions, other than the one to be tested, shall remain as nearly as possible the same.

Q. 69. You have spoken of the advantages of the tell-tale line and the directions sent back over it, with reference to the adjustment of a battery transmitter. How great are the advantages derived from such an arrangement in cases where it is a magneto transmitter that is in use on the testing line, such an instrument, for example, as "C reproduced" or "I reproduced"?

Ans. I do not consider that the tell-tale line would materially assist in the operation of adjusting a magneto transmitter. Practically it can be effected by the eye as well as in any other manner. All that is necessary is to bring the diaphragm as close as it can be brought to the pole or poles of the magnet without liability of touching it under the ordinary conditions of use; and this can be determined without even placing it in circuit.

Recess until 2.30, P. M.

Q. 70. On the evening of the first day of these tests in New York I asked you and some of the other gentlemen present on behalf of complainants, to make a joint memorandum of that day's experiments and their results. Will you produce the memorandum so made, and state the circumstances under which it was prepared, and whether it is a correct statement of what took place on that day?

Ans. I now produce the memorandum referred to in the question. It is a consolidated report, made up from notes taken by Prof. Cross, Prof. Wright, Mr. Jacques, and myself; two of us having usually been in the transmitting-room and two in the receiving-room at the same time during the day. In the evening of the day in which the tests were made, we all assembled at the room of Mr. Storrow, and the report, substantially in its present form, was dictated to Mr. Rydall, and taken down by him in shorthand. Each statement included in the report was criticised and corrected by all the persons present.

Within a few days thereafter, while the proceedings were still fresh in my memory, I carefully revised the whole, compared it again with my own notes as taken during the day, and made any corrections that seemed necessary. I believe the report, as now presented, to be, so far as it goes, a truthful and accurate statement of what took place during the tests of

the first day. I should have stated that Mr. Rydall, the stenographer, was present during the last hour or two of the session of that day, and made verbatim notes, which are also incorporated in the report.

[*Complainants' counsel offers in evidence the paper produced by the witness, and it is marked "Complainants' Joint Memorandum of the First Day's Tests with Drawbaugh Exhibits*].

[*Objected to as a mere compilation made by complainants' agents, and not complete, and in part made up of hearsay.*]

Q. 71. How many telephonic instruments are required to make an operative speaking-telephone apparatus, capable of transmitting articulate speech so that it can be heard and understood by a listener at a distant station?

Ans. At least two instruments are essential in every case, namely: a transmitter at one station and a receiver at the other.

Q. 72. Then, if I understand you, a man does not have an operative speaking-telephone apparatus by possessing one instrument, no matter how perfect that may be; what is the fact about that?

Ans. Certainly not; the one instrument may be both a transmitter and a receiver, but it cannot fulfil both functions at the same time, nor can it operatively perform either function unless coupled with another instrument.

Q. 73. And in a case where an apparatus is to be made up of an instrument known as a battery transmitter at the one end, and an instrument known as a magneto receiver at the other, I suppose that the possession of one in an operative form would not necessarily carry with it, or imply the knowledge of how to make the other in an operative form, would it?

Ans. Not at all; the two instruments are wholly unlike in construction.

Q. 74. As I understand the nature of the speaking-telephone apparatus, it would be necessary, in order to ascertain whether instruments possessed by a person at any particular time constituted a practically operative speaking telephone capable of transmitting intelligence by means of spoken words uttered at one station and reproduced at another by the apparatus, to find out whether he had two instruments which when coupled together by suitable connecting wires and provided with a suitable battery when needed, could perform that feat. Of the various exhibits produced on behalf of Mr. Drawbaugh I understand that the only ones which are

even alleged to have been made before the date of Mr. Bell's patent of March 7, 1876, are the instruments which are marked, or the remains of which are marked "F" "B," "C," "I," "A," "D," "E." In order that we may more conveniently ascertain whether any couples made up out of these instruments are practically capable of being used as operative instruments for the purpose of carrying on conversation between distant stations, or transmitting intelligence from one station to another, I have asked you to prepare from the various notes already put in evidence and to present in a convenient form what was actually done and accomplished in the New York tests with couples entirely taken from the instruments I have named in this question, adding thereto such summary statements of your own as you might think suitable to put in that connection for the purpose of characterizing the results or calling attention to any special fact connected therewith. If you have done so, will you please produce the paper and read it as part of your answer?

[*Objected to as argumentative and assuming.*]

Ans. I have done so; the couples which were tried on the tests made up entirely out of those instruments, are as follows: the transmitting instrument being in each case named first:

"F reproduced" and "B reproduced."

"F reproduced," and "A."

"C reproduced" and "I reproduced."

I now present my summary, showing the matter which was attempted to be transmitted, and that which was received at the other end of the line, arranged in such a manner that the actual work done may be easily seen. This compilation has been carefully compared with all the original notes, and is as accurate as it was possible to make it. In case of any discrepancy between the different sets of notes, as to the number of repetitions of a particular phrase and the like, I have admitted such statements as were found to agree in the notes of at least two different persons; and where the discrepancy could not be reconciled in that way, the doubtful repetition has been omitted. I have taken every possible precaution to insure the most rigid accuracy. I have not found, in any case, any material discrepancy between the notes taken by the complainants and by the defendants respectively, and nothing of the kind which would in the least affect any conclusions which might be drawn from them.

Results of New York experiments made with couples of instruments, of which both members are alleged to have been constructed, or are styled

reproductions of instruments, alleged to have been constructed before March 7, 1876. Pairs of instruments thus tested:

"F reproduced" and "B reproduced."

"F reproduced," and "A."

"C reproduced" and "I reproduced."

STATEMENT OF WHAT WAS ACTUALLY ACCOMPLISHED WITH INSTRUMENTS "F REPRODUCED" AND "B REPRODUCED" IN THE NEW YORK TESTS.

First Day,—March 28, 1882.

Mr. Benjamin remarked that all he expected to get was a sound, and now and then a word.

Instrument adjusted by Mr. Drawbaugh. Mr. Benjamin listens. Ten minutes occupied in adjusting "F Reproduced" with Tisdel instrument as receiver. Then "B Reproduced" was tried as receiver.

Up to the time the tell-tale line was put on the results were as follows:

Knew that some one was counting from 1 to 20. Heard, "*I am now talking into—transmitter,*" or something of that kind; the words actually spoken were "Old transmitter." Heard "*Galvanometer in circuit*"—part of a sentence, whole of which was, "I am speaking into the tumbler instrument, with a galvanometer in circuit." Heard correctly, "*Do you understand?*" Then several sentences, of which only three detached words were heard. Then heard the words, "*Answering,*" "*What I say.*" Newspapers sentences tried, but none understood; this occupied 30 minutes.

The tests then continued one and a quarter hours longer. "F reproduced" used as transmitter and "B reproduced" as receiver. A Tisdel receiver was substituted for a short time to adjust "F reproduced" by. Tell-tale line here put in.

What was supposed to be heard with "F reproduced" and "B reproduced" was, "*I am speaking now into the old tumbler instrument; do you hear me?*" and the following words, parts of sentences: "*to send,*" "have been," "telephone," "*and,*" "about," "*the,*" "majority," "*do you hear me now?*" "how is that for high?" Sentence was, ("I see five cats.") "*I am speaking into the tumbler transmitter.*" "*I took,*" "*New England,*" "*music-box,*" "*Battery,*" "*adjourn for lunch.*" Words heard correctly are in italics.

Irregular numbers were spoken into the transmitter. 138 numbers were spoken, and of these 18, and no more, were heard correctly.

During the whole of this time the experiments continued incessantly;

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the attempts at talking did not cease except for the purpose of adjusting the instruments. The time occupied on "F reproduced" and "B reproduced" was about one hour and a half.

Of the phrases thus supposed to be heard, only those words in italics were words actually spoken; the others were quite different from what was said. 55 words correct, mostly detached words conveying no meaning. No sentence, except that about the tumbler transmitter, a very familiar and oft repeated phrase.

[*After this failure on the first day, the defendants did not attempt any further use of "F reproduced" and "B reproduced" together.*].

"F REPRODUCED" AND "A."

Second Day,—March 29, 1882.

This test on the second day lasted 50 minutes, from 5:25 to 6:15 P. M. Ordinary remarks and newspaper sentences were attempted; nothing was received except a few familiar stock phrases, such as "do you hear me now." The following are all the words that were heard correctly:

"Answer back to me what I say to you." "March 21, 1882"—after repetition. "To-day"—only word of a sentence. "Did you hear what I said," "It is faint now", "How are you to-day", "Can you hear what I say now", "Do you hear me now", "Did you hear", "This is tumbler F," after repetition. "Can you hear what I say", "Very well, do you hear now what I say"—after repetition, and not exactly what was said. "Mr. Hoar . . . . . resolution", part of a sentence. "To-day", only word out of a sentence. . . . "How is that". 68 words in 50 minutes.

To accomplish this more than 550 words were uttered into the transmitter. It is obvious upon reading what was heard, that it cannot be said that the instruments accomplished the transmission of intelligence. Reading the verbatim report of what was heard, conveys no idea whatever of what was said.

Numbers from 1 to 10 in regular order were counted 19 times and heard and understood 7 times. 37 irregular numbers were uttered and 13 of them heard.

Newspaper sentences attempted to be transmitted by instruments "F reproduced" and "A," on afternoon of second day.

[*From Boston Daily Advertiser, March* 22, 1882.]

"Washington, March 21, 1882, The House to-day, by a strong vote" . . . . (Not understood, and the rest of the sentence abandoned.)

"Mr. Hoar offered a resolution", (Not understood, and no attempt made to transmit the rest of the sentence.)

The other sentences attempted were chiefly, "Do you hear me now"; "this is the tumbler F," etc.

Second Day, March 29, 5:30 P. M.

"F reproduced" and "A" on circuit.

Spoken by Mr. Hill.	*Heard at receiver by Mr. Benjamin.* [Words heard *correctly* are in italics.]
Are you ready in there?	Not heard.
Do you hear anything now?	Not heard.
Do you hear me?	What?
Mr. Hill is speaking, do you hear anything?	What?
Mr. Hill is speaking, do you hear anything?	Not heard.
Tell me as soon as you hear.	Not heard.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	Not heard.
(Further Adjustments.)	
What receiver have you got?	Not heard.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	Pretty faint.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	Great deal louder but a peculiar twanging sound.
Were you listening then?	Not heard.
Did you hear that?	Nothing at all.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	Not a thing.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	Nothing at all.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	Quite good; can't you give us a sentence?
Answer back to me what I say to you.	*Answer back to me what I say.*
Washington, March 21, 1882.	Too faint.
Washington, March 21, 1882.	*March 21, 1882.*
The House to-day by a strong vote.	*To-day.*
The House to-day.	Not heard.
I think it needs more adjustment.	Not heard.
Do you hear that?	Too faint.
I think it needs more adjustment, do you hear that?	Little bit better.
I think it needs more adjustment, do you hear that?	A little better.

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Could you hear what I said?	What was it; repeat it, that is pretty good.
Do you hear what I say?	*Did you hear what I say?*
Now I will try again, do you hear that?	Very faint.
Now, is it faint now?	Yes, *it is faint now.*
Now do you hear what I say?	What did he say? Give a sentence.
Mr. Benjamin how are you to-day?	That's pretty good now, keep it like that.
How are you to-day?	*How are you to-day?*
Are you getting about ready for supper?	Not heard.
Are you getting about ready for supper?	The instrument breaks.
Do you hear?	Not heard.
Do you hear?	Too faint.
Do you hear?	The instrument breaks.
Well, how is it now, do you hear now?	Very faint.
How do you hear now?	Faint.
Do you know what was said?	Not heard.
Tell me what I say now.	Not heard.
Whenever you hear what it is, repeat it to me please.	Very faint.
Tell me what I say now.	Too faint.
Tell me what I say now.	Faint.
Can you hear what I say now?	*Can you hear what I say now.*
I will make a little change, not much.	Gone.
I have adjusted it a little, hear that?	It was louder, but can't make out what it is.
I have adjusted it a little, hear that?	Gone.
I have adjusted it a little.	Very faint.
Can you hear me now?	Very faint.
Did you understand?	Not heard.
Do you hear me now?	*Do you hear me now?*
This is the old instrument F.	Don't understand.
Do you hear?	Not heard.
This is the tumbler F—Did you hear what I said?	*Did you hear what I said?*
This is the tumbler F.	What was that?
This is tumbler F.	*This is the tumbler F.*

Now how does it work?	Too faint.
Now how does it work?	Nothing at all.
Do you hear that?	Not heard.
Now how does it work?	Nothing at all.
Now do you hear me?	Not heard.
Do you hear that?	Not heard.
It is very probable they are all asleep.	Heard nothing.
Now do you hear what I say?	*Can you hear what I say?* (that's pretty good.)
Can you hear what I say?	
Very well; tell me now what I say.	*Very well;* do you hear *now what I say?* (that's pretty fair, give me a sentence to try.)
Mr. Storrow is standing by my side, do you hear that?	Don't adjust it again but go on.
Repeat what you hear.	Not heard.
What did you hear?	Not heard.
Repeat what you heard.	Nothing at all.
Did you hear it. If so, repeat it.	Don't understand it.
Well, start again; do you hear me now?	Nothing at all.
Do you hear that?	Nothing whatever.
Hallo! do you hear that?	All spoiled now; it was good before.
Do you hear me now?	Nothing whatever.
Do you hear anything?	Not heard.
Did you hear that?	No.

(Instruments Adjusted.)

Hallo! did you hear that?	No, I have not got a single word.
Now do you hear what I say?	That's better.
Do you hear that?	Just heard the voice, but very faint.
Hallo!	
Now do you hear anything?	
Did you hear that?	Nothing whatever—nothing yet.
Do you hear that?	
I will count.	
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	Too faint—just heard something.
Do you hear that?	
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	That is better.
Did you hear what it was?	
Well, repeat it if you did.	Too faint.

Repeat what you heard.	
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	Counted up to 3 or 4.
Did you hear that?	
What was it?	
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	Heard that pretty good.
Columbus discovered America.	Too faint; could not hear.
Columbus discovered America.	
Columbus discovered America.	
Did you hear that sentence?	Could not understand the sentence.
Columbus discovered America.	Too faint.
Did you hear that?	
Columbus discovered America. Did you hear that?	Something about the diaphragm.
Columbus discovered America.	Too faint.
(There was considerable speaking and counting for adjustment at this point, not taken down; Stenographer's notes in receiving-room show this.)	(Adjustment and counting.)
1, 2, 3, 4, 5, 6, 7, 8. 9, 10.	*Counted up to 10;* make it louder.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	Quite good; give us a sentence.
Mr. Hoar offered a resolution.	No.
Mr. Hoar offered a resolution.	*Mr. Hoar—resolution.*
Shall I adjust any more now?	Not loud enough.
(Adjustments)	
Do you hear me now?	
Did you hear that?	No.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	*1 to 10.*
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	
(Further adjustments.)	*1 to 10.*
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	No.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	That was pretty good—a few words in the same way.
What is the price of stocks to-day, high or low?	No; repeat.
What is the price of stocks to-day, high or low?	Get the words "*to-day;*" read just a little more.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	No.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	No.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	*1, 2, 3, 4,* loud; *10* almost inaudible and it tapered down between them.

1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	As far as 3 this time, and then became silent.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	*1—8*, and then became silent.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	*1—10*, but weak at the end.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	Got as far as that time; very faint.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	No.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	No.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	No.
Do you hear now?	Put on the music-box and see if we can hear that.

Music-box put on "F."

(Instrument adjusted; operator at transmitter directed to change adjustment gradually until Mr. Benjamin, at receiver, directs him through tell-tale line to stop.)

Do you hear me now?	
Did you hear that?	
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	Didn't hear.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	Didn't hear.

(Mr. Hill says, "The carbon is caked; I want to have Dan arrange the instrument.")

(Instrument adjusted; put in new battery cell, one prism Le Clanché.)

Do you hear now?	
Did you hear that?	
Hear any better now?	
Do you hear now?	
Did you hear that?	
Hear anything at all?	Didn't even hear that any one was speaking.
Did you hear that?	
(Transmitter adjusted.)	
Do you hear what was said?	
What did we say then?	Didn't hear.
Do you hear?	How is that?
No, that was not it.	
Did you hear?	Don't get that.
I asked you if you heard.	Not heard.
I asked you if you heard.	No.
I asked you if you heard me.	No.
What did you hear then?	
What was it then?	No.
1, 4, 6, 8, 10, 20,	
30, 40, 50, 60, 70,	

1, 4, 6, 8, 10, 20, 30, 40, 50, 60, 70,	
30, 7, 60, 26,	*30, 7, 60, 26.*
1, 3, 5, 6, 10, 14, 18, 22,	*1, 3, 5, 6, 10,* 13, *14,* 95.
69, 81, 94.	*69, 81, 94.*

Repeat what you heard.

Adjourned for the day.

Third Day, Thursday, March 30, 1882.

Tests with "F reproduced" and "A."

In the following report of tests of third day, Thursday, March 30, the words spoken in the transmitting-room are taken chiefly from Mr. Rydall's notes on the part of complainants, and those heard in the receiving-room from the notes of Messrs. Paddock and Donahoe on the part of defendants. The whole has been compared with and corrected by the notes of Messrs. Marx and Jacques.

THURSDAY, *March* 30, resumed at eleven o'clock.

The instruments were arranged and used with extraordinary care and precautions, as follows: besides the precautions of requiring everybody to keep silent and not to move across the room nor touch the table on which the transmitter rested, a heavy block of artificial stone was placed on the heavy office table. The transmitter "F reproduced" was placed upon this block, and the operator took great care not to touch it nor communicate any jar to it. He spoke in a remarkably clear, even, and carefully modulated tone of voice, skillfully changing the tone, or changing his distance from the instrument, or altering the adjustment in accordance with the indications frequently received from the receiving operator over the tell-tale line or by messenger.

Mr. HILL. You have got the "E" instrument at your end of the tell-tale line, and we have got on the testing line "F reproduced" and "A." Three Drawbaugh instruments on two lines.

11.32, A. M.

Words spoken into the transmitter "F reproduced:"	Words heard by Mr. Benjamin at the receiver "A." "No," "Again," "Repeat," etc., signify that the listener did not hear, demands a repetition, etc. Words heard correctly are in italics.
Mr. Hill; hallo! hallo! hallo! hallo! do you hear me now, hallo!	

1, 2, 3, 4, 5. 6, 7, 8, 9, 10.	*Counted up to 10.*
Did you hear that?	
What shall I do now?	*What shall I do now?*
Shall I read about something?	*Shall I read something?*
Shall I read about something?	I will *read* you *something.*
We take it that he will be recalled.	Get nearer and speak louder.
We take it that he will be recalled.	Not heard.
Do you hear now?	*Do you hear* noise.
Do you hear now?	Repeat it.
Do you hear now?	Repeat it.
We take it that he will be recalled.	Louder.
Did you hear that?	Not heard.
We take it that he will be recalled.	Louder.
Did you hear that?	Repeat me back what I say.
	Go on and read from newspaper.
Very well, I now will read.	*Very well, I now will read.*
We take it that he will be recalled.	Go on and read.
I will now read.	*I will now read.*
We take it that he will be recalled.	It *will be* returned.
Or if President Arthur	*If Pres. Arthur.*
does not immediately recall him	Not heard.
does not immediately recall him	*Does not immediately* retire *him.*
upon learning the action	*Upon.*
of our board of aldermen	Keep nearer to instrument.
Upon learning the action of our board of alderman	Not heard.
(Transmitter readjusted.)	
Benjamin, do you hear now?	We hear you—keep closer to the instrument and go on.
I will read again,	Not heard.
There's probably no organized body in this country	No, too weak, cannot hear.
Take it off and put on the Tisdel.	Repeat.
Take it off and put on the Tisdel.	*Take it off and put on the Tisdel.*
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	Tell him he counted all right, the instrument breaks; what do you want changed for the Tisdel?
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	
Tell Marx to stop talking.	Too faint.
Tell Marx to stop talking.	Too faint.
Tell Marx to stop talking.	Too faint, repeat.
Tell Marx to stop talking.	Too faint, repeat.

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(Adjusting transmitter.)	
1, 2, 3, 4, 5, 6, 7, 8.	Heard counting to 8.
Listen while I talk.	
Do you hear that?	*Do you hear that*—very nice.
We take it that he will be recalled.	It *will be* returned.
No, that was not right.	*No, that was not right.*
I will read from the newspaper.	*I will read from the newspaper.*
New York Daily Tribune, March 29th.	*New York Daily Tribune, March 29th.*
The recall of Mr. Lowell.	Not heard.
The recall of Mr. Lowell.	Not heard.
The recall of Mr. Lowell.	Not heard.
The recall of Mr. Lowell.	No—too weak.
The recall of Mr. Lowell.	Too weak.
The recall of Mr. Lowell.	Not heard.
The recall of Mr. Lowell.	Not heard.
The recall of Mr. Lowell.	No, instrument broke all up.
The recall of Mr. Lowell.	Broke again.
The recall of Mr. Lowell.	Broke.
Did you get that?	*Did you get that?*
The recall of Mr. Lowell.	What was it?
The recall of Mr. Lowell.	Not heard.
See if you get this.	Not heard.
There is no reason why Mr. Lowell.	*There is no reason.*
There is no reason why Mr. Lowell.	Please repeat.
There is no reason why Mr. Lowell.	*There is no reason.*
There is no reason why Mr. Lowell.	That *Mr.* Somebody.
Why Mr. Lowell.	Sounds like Mr. Blaine.
Lowell.	Not heard.
Not Blaine, but Lowell, our minister to England.	*Mr. Lowell, our minister to England.*
Should be reproached.	*Should be* recalled.
Should be reproached, on account.	*On account.*
Should be reproached.	Of the report.
For his action in the Lamson case.	Of *his action in the.*
Lamson case.	Mansion case.
He has forwarded to the home department	Louder
he has forwarded to the home department	Last word was *department;* what was before?
home—he has forwarded to the home	

department	*forwarded to the* State ***department***
home—h-o m-e	*forwarded to the home department*
the memorial adopted at a meeting of Americans in London	*A memorial* address by a body of *Americans* while in London
together with the despatches	not heard
together with the despatches	not heard
together with the despatches	not heard
together with the despatches	transmitted *with the despatches*
relating to the case	not heard
relating to the case	*relating to the case*
received from this country	with *this country*
received from this country	not heard
received from this country	from this country
but he has not considered it	no—louder
but he has not considered it	not heard
but he has not considered it	that *he has* contradicted
but he has not considered it	not heard
his official duty	the *official duty*
to influence the action of the secretary	the *action of the secretary* did not get the other words
to influence the action of the secretary	louder
to influence the action of the secretary	not heard
by personal appeal.	Not loud enough.
By personal appeal.	Go on.
I will read another article.	*I will read another article.*
Did you hear that plainly?	Not heard.
Did you hear that plainly?	*Did you hear that plainly?*
All right, now listen.	Not heard.
All right, now listen.	Not heard.
I said all right, now listen.	*All right*, I'll read it.
(Instruments readjusted.)	
1, 2, 3, 4, 5, 6, 7, 8, 9, 10; how do you hear that?	Too faint.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10; how did you hear that?	All right, *how did you hear that?*
Did you hear me count?	Not heard.
Did you hear me then?	*Did you hear me then?*
How plainly can you hear me?	Not heard.

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How plainly can you hear me?	*How plainly can you hear me.*
Now listen and I will read.	Now *listen and I will read.*
The annual conflict between landlords and tenants,	Too faint.
The annual conflict between landlords and tenants,	Not heard.
The annual conflict between landlords and tenants,	*The annual conflict between* . . . and Cannon,
between landlords and tenants,	Not heard.
between landlords and tenants.	Between who and Cannon?
	I can't make out the name.
Landlords.	What?
L-a-n-d-l-o-r-d-s.	Again.
L-a-n-d-l-o-r-d-s.	Spell again.
L-a-n-d-l-o-r d-s.	Vandeler.
Landlords.	Chandeler.
Is now almost at its height.	*Is now* advanced to *its height.*
And careful enquiries by Tribune reporters.	Not heard.
And careful enquiries by Tribune reporters.	Not heard.
And careful enquiries by Tribune reporters.	Not heard.
And careful enquiries by Tribune reporters.	Too weak.
(Drawbaugh adjusts instrument.)	
And careful enquiries by Tribune reporters.	Entirely *by Tribune reporters.*
E-n-q-u-i-r-i-e-s.	No, spell it again.
E-n-q-u-i-r-i-e-s.	No, once more.
E-n-q-u-i-r-i-e-s.	In Congress.
E-n-q-u-i-r-i-e-s.	Spell it again.
E-n-q-u-i-r-i-e-s.	Once more, missed all but two or three letters.
E-n-q-u-i-r-i-e-s.	Not heard.
Let it go.	Not heard.
Let it go.	Not heard.
Do you now hear what I say?	*Do you now hear what I say?*
How plainly do you hear?	*How plainly do you hear?*
Is that better than before?	Too weak.
Is that better than before?	

Is this any improvement?	No:
Is this any improvement?	*Is this any improvement?*

(Instrument constantly adjusted by Drawbaugh.)

Let me read again.	*Let me read again.*
The annual conflict between landlords and tenants.	*The annual conflict between* Chandler & Cannon,
Landlords,	No.
Is now almost at its height,	*is now at its height.*
and careful enquires by Tribune reporters,	Reported entirely *by Tribune reporters.*
In all parts of the city,	No.
in all parts of the city,	No.
in all parts of the city,	Is very far from being finished.
in all parts of the city,	No.
Do you hear me now?	*Do you hear me now?*
Another element in Nebraska politics this year,	Too weak.
Halloa! halloa!	Not heard.
Did you hear that?	Not heard.
How do you hear this?	Not heard.
Halloa! halloa! Benjamin.	Not heard.
	[Mr. Ott came in to know what the matter was; we have not heard anything for several minutes.]
[Drawbaugh goes to adjust instrument in receiving room, but returns and says Mr. Benjamin will not allow him to adjust it.]	
Do you hear this?	*Do you hear this?*
Well, answer back, answer what instrument you have.	*What instrument are you at?*
Answer what instrument you have.	*Answer what instrument you have.*
I will read again.	*I will read again.*
Southern education.	Not heard.
Southern education.	Second visitation.
15 millions a year for 10 years.	Not heard.
15 millions a year for 10 years.	That's too loud.
15 millions a year for 10 years.	Oh, no—too loud—breaks.
15 millions a year for 10 years.	No—worse.
15 millions a year for 10 years.	Not heard.
15 millions a year for 10 years.	*15 millions,—10 years.*

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Is the modest sum.	Not heard.
Is the modest sum.	Not heard.
What is the reason you can't hear now?	Not heard.
What is the reason you can't hear now?	*What is the reason you can't hear now?*
Let me try it again.	*Let me say it again.*
Let me try it again.	Too loud—breaks.
Let me try it again.	Worse—breaks.
Let me try it again.	All broke.
Let me try it again.	Broke.
Hallo! let me try it again.	No—broke.
Let me try it again.	Broke.
Let me try it again.	Too loud.
let me try it again	Now, *try it again*,
fifteen millions a year for ten years	*Fifteen millions* have been here
is the modest sum demanded now of Congress	Not heard
is the modest sum demanded now of Congress	Get the words, *of Congress*
by Southern members for education in their section	By certain members *in their section*
you get part but not all	Not heard
you get part but not all of my words	Broke

(After every four or five utterances directions were sent for the speaker to modulate his voice, as "louder," "not so loud," "instrument breaks," etc., and this change in the voice of the operator to suit the condition of the transmitter aided materially in getting such results as were obtained.)

(My notes show repeated stoppages for adjustment of transmitter which are not here noted.

("A" taken off at 12:30 P. M.)

"C REPRODUCED" AND "I REPRODUCED" ALONE.

First Day.

Each was first adjusted by trial with a Bell magneto-telephone, and then the two were connected. No complete sentence was understood. All that was heard with them were the following, besides detached words:

"30 men and 30 women were drowned in a—;" "what instrument?" "electric light," part of a sentence; "can you hear that?" part of a sentence; "is a great invention," part of a sentence; "do you know?" part of a sentence; "Dan, can you hear me?" "Did you hear that, Dan?" sentence

spoken was, "Can you hear me now, Dan?" "Mr. Benjamin," part of a sentence; "Can you hear me?" sentence spoken was, "Do you hear me? I am now speaking to you," and this was repeated; "did you hear that?" sentence spoken was, "Do you hear me?" "Mr. Benjamin," part of a sentence; "telegraph company," "at advanced," "per cent.," "the manufacture of the," none of these words were said; "in June last"—not what was said; "What time have you?" part of a sentence; in all 50 words.

There were only two cases in which enough was understood to convey the meaning of a single sentence, and this only after repetition.

60 irregular numbers were spoken into the transmitter; 12 of these, and no more, were heard correctly. These tests with "C reproduced" and "I reproduced" altogether occupied one hour.

The defendants did not attempt to use these instruments together again during the three days of test.

This experiment was interrupted for "I reproduced" to be adjusted by opening it and inserting paper gaskets in order to change the distance between the armature and magnet. The time occupied in this is not included in timing the above experiment, but was employed in trying "C reproduced" and a modern Bell magneto instrument together.

(*Answer and the paper produced in connection with it, objected to by Mr. Hill as composed in part of hearsay and because the paper is a mere compilation.*)

Q. 75. Will you state what the tests in New York show as to whether an apparatus composed of the instrument marked "F reproduced" as a transmitter and "B reproduced" as a receiver constitutes a practically operative speaking-telephone apparatus, by means of which intelligence can be transmitted from one station to another?

Ans. In my opinion the tests of these instruments demonstrated conclusively that it was impossible to effect the transmission of intelligence by means of them, and that they, therefore, cannot be said to constitute practically operative speaking-telephone instruments. Not enough could be understood of any sentence to convey an intelligible idea of its meaning, except in the case of a few familiar and often repeated phrases which were capable of being recognized by their rhythm, even when articulation was almost altogether absent.

Q. 76. Suppose you had two sets of the instruments, referred to in the last question, connected upon two separate lines between two stations, so as to have at each station the transmitter of one line and the receiver of the other, could you by means of such two sets of apparatus carry on

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conversation or make inquiries and receive replies with such success as to be of any practical utility?

Ans. Judging from the results obtained in the tests, I am certain that it would be absolutely impossible to converse to and fro under the condition mentioned in the question. Nor could a question be asked and an intelligent reply received.

Q. 77. Judging again from these same New York tests, would or would not such a set of instruments as those marked "F reproduced" and "B reproduced" be of any practical utility as a means of communicating between distant stations by word of mouth if no better speaking telephone apparatus existed?

Ans. I cannot conceive that they would be of the least practical utility for such a purpose.

Q. 78. Will you please answer the questions number 75, 76, and 77, substituting instrument "A" as the receiver in place of instrument "B reproduced"?

Ans. I make the same answer as to "F reproduced" and "A," although I think the results of the tests were a trifle better when "A" was used in place of "B reproduced." The difference, however, was not sufficient to enable me to say that the second couple was a practical apparatus, or that it accomplished the transmission of intelligence any more than the former ones mentioned.

Q. 79. Will you please answer the same questions, substituting as the couple "C reproduced" as transmitter and "I reproduced" as receiver, in place of "F reproduced" and "B reproduced?"

Ans. The results with "C reproduced" and "I reproduced" were no better than with the two couples of which I have already spoken; in fact, I think they were worse if anything. I therefore repeat my answers to questions 75, 76, and 77, in reply to your question as to "C reprodnced" and "I reproduced."

Q. 80. You have now testified concerning the practical utility of all the couples tried at the New York tests, which were entirely made up of instruments alleged to have been made before the date of Mr. Bell's patent of March 7, 1876, or of so-called reproductions of said instruments, four out of the five being so-called reproductions; the differences between these so-called reproductions and the alleged originals having been already pointed out in your answers 31 to 55 inclusive. In order to push the inquiry further, I requested you to prepare, in a similar way, a summary memorandum of the tests of all couples tried in New York, one member

of which was an instrument alleged to have been made before the date of the Bell patent, or was styled a reproduction of an instrument alleged to have been made before the date of the Bell patent of March 7, 1876; if you have done so, will you please produce it and read it as part of your answer?

Ans. I now produce, as part of my answer, a statement showing the results obtained with pairs of instruments as called for in the question, the instruments thus tested being as follows:

"F reproduced" and a Tisdel Magneto Telephone,
"F reproduced" and a Bell Magneto Telephone,
"O" and "A."
"H" and "A."
"H" and "B reproduced."
"H" and "E."

This statement is made up in the same manner as the previous one which forms part of my answer to question. It is as follows:

Result of the New York Experiments made with couples of instruments, of which one individual instrument is alleged to have been constructed, or to have been a reproduction of one constructed, before March 7, 1876, and the other at some more recent date.

Pairs of instruments thus tested.

On the first day "F reproduced" and a Tisdel receiver—which is a modern magneto telephone with all the improvements in practical use and in a good form—nearly as good as the ordinary Bell Magneto, was used. It is the infringing instrument. On the third day "F reproduced" and a Tisdel, also "F reproduced" and a Bell magneto receiver.

For the purpose of adjusting "C reproduced" and "I reproduced," on the first day, before trying these two in conjunction, each was tried for some little time with a Bell magneto telephone.

O and A were tried and also H and A. H was tried with "B reproduced and with E as receivers on the first and second days.

"F reproduced" and a Tisdel.

First Day.

Little or nothing made out at the receiving end. Portions of sentences: "I am talking—do you understand—can you hear me now;" regular numbers and single words out of a sentence were heard and understood. Many sentences were spoken and nothing of them understood or occa-

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sionally single words out of a sentence. These two instruments were connected up three different times on the first day, adjusting each time by making use of a Tisdel or Bell receiver instead of "B reproduced."

On the 3rd day "F reproduced" was arranged in the most careful manner (being placed on a heavy block of stone) and was used as a transmitter in connection with a Tisdel magneto receiver and a Bell magneto receiver, with the following results:

"F reproduced" as transmitter.	Tisdel receiver here put in place of A.
Mr. Hill spoke.	Mr. Benjamin listened.
[Instruments adjusted.]	
Hallo! do you hear me now?	*Do you hear me now?*
Is that better than before?	Not loud enough.
Well, how is this, is this better?	Clearer, but not quite loud enough.
Can I read an article for you now?	*Shall I read an article for you now?*
All right I will read.	*All right—I'll read.*
New York Tribune, March 29.	*New York Tribune, March 29.*
Southern education.	*Southern education.*
15 millions a year for 10 years is the modest sum,	Not heard.
15 millions a year for 10 years is the modest sum,	Not heard.
15 millions a year for 10 years is the modest sum,	*15 millions* only.
15 millions a year for ten years,	No, *15 millions a year.*
For ten years,	Not heard.
For ten years,	Not heard.
is the modest sum,	Not heard.
is the modest sum,	Not heard.
Do you hear me now?	Too weak.
Well, what is the matter?	*What is the matter?*
Do you hear me now?	*Do you hear me now?*
How plainly do you hear?	Not heard.
How plain can you hear?	*How plainly can you hear?*
I will speak louder.	How is it now, about the same?
No, that is not what I said.	Repeat it.
No, that is not what I say.	*No, that is not what I said*
Have you heard of Judge Wallace's appointment?	Not heard.
Have you heard of Judge Wallace's appointment?	No, repeat.

Have you heard of Judge Wallace's appointment?	*Have you heard of Judge Wallace's appointment?*
How do you like it?	*How do you like it?*
Judge Blatchford is still in town yet.	Not heard.
yet	
Judge Blatchford is still in town.	*Judge Blatchford is* not *in town.*
I said is yet in town.	I said "is not *in town.*"
Is Mr. Storrow near you?	Not heard.
Is Mr. Storrow near you?	*Is Mr. Storrow near you?*
Is a reporter taking down what I say?	Not heard.
Is a reporter taking down what I say?	How far can you understand *what I say?*
No, that is not what I said.	Not heard.
No, that is not what I said.	Did you hear then *what I said?*
Partly right, partly wrong.	Faint; say it again.
I said no, that is not what I said.	*I said no, that is not what I said.*
Do you want to hear something about Senator Logan?	Now I will read you *something about Senator Logan.*
I didn't say I would read.	No.
I didn't say I would read.	No.
I didn't say I would read.	Not heard.
Let me count.	Not heard.
Let me count.	Not heard.
Now do you hear me?	It is not.
Now do you hear me?	Not loud enough.
Now do you hear me?	Not heard.
Now do you hear me?	Not heard.
Now do you hear me?	How *do you hear me?*
Do you hear me now?	Hallo.
Do you hear me now?	How *do you hear me?*

Tisdel receiver taken off and Bell receiver substituted.

(Reproduced F still used as transmitter.)

Hallo! Hallo!	*Hallo!* too weak.
Do you hear me now?	*Do you hear me now?*
I am speaking louder; how is that?	Not heard.
I will speak louder.	*I will speak louder.*
How is that, better or worse; how is that?	*How is that—better or worse—how is that?*
Do you like the Bell receiver better than the Tisdel?	*Do you like the Bell receiver better than the Tisdel?*

AMERICAN BELL TELEPHONE COMPANY, -4

Do you hear more plainly in the Bell?	
Do you hear more plainly in the Bell?	*Do you hear more plainly through the Bell?*
(Instrument adjusted.)	
There, how is that?	
I will adjust it again.	Very well, *I will adjust it again.*
There, how is that?	
How is that now?	
Hallo! hallo! hallo! hallo!	*Hallo.*
Do you hear me now?	*Can you hear me now?*
Plainly?	*Plainly.*
All right.	*All right.*
Dan. Drawbaugh is standing by my side.	*Dan Drawbaugh is standing by my side.*
Do you want me to read?	*Do you* wish *me to read?*
All right, I will read.	*All right, I will.*
New York Tribune, March 29.	*New York Tribune, March 29.*
Southern education.	Saturday's edition.
15 millions a year for 10 years.	Not heard.
15 millions a year for 10 years.	*15 millions.*
Are you listening now?	Do you hear me now?
I will read another article.	
Do you hear that?	Not loud enough.
I will read another article.	*I will read another article.*
Post-master General Howe	*Post-master General Howe.*
has a way of putting his feet upon the center-table	*Has* what?
has a way of putting his feet upon the center-table	Not loud enough.
has a way of putting his feet upon the center-table	*Has a way of*
putting his feet upon the center-table	*Putting his feet upon the center-table*
During an interview.	Too faint.
During an interview.	Repeat
During an interview.	*During an interview.*
In such a manner.	Not loud enough.
In such a manner.	*In such a manner.*
As to throw a homelike air upon the whole scene.	Not heard.
As to throw a homelike air upon the whole scene.	Not heard.

As to throw.	Not heard.
As to throw.	Not heard.
As to throw.	Not heard.
As to throw.	Not heard.
As to throw.	Not heard.
Let me talk about something else.	Not loud enough.
I will not read any more but talk.	No.
(Instrument adjusted.)	
Hallo! hallo! do you hear me now? do you hear this? hallo! how is that—how is that—how is that? hallo! how is that? how is that? hallo! hallo! hallo! hallo!	The listener here answered "too loud—good—not good—no—bad—etc., during a considerable time while adjustment was going on.
(Drawbaugh adjusts.)	
Hallo! do you hear me now?	
Do you hear me now?	
Too loud or not?	Too much sputtering.
How is this?	No—bad.
Well, how is this?	Still bad.
Is this better?	Very loud, try it again.
Is this better?	Try it again.
Is this better?	Once more—try it again.
Is this better?	Too loud.
Is this good?	Too loud.
Is this good?	No—too loud; the instrument broke.
Is this good?	Not clear enough.
Is this better?	Was that *better?*
Is this better still?	Was that *better still?*
Is this better still?	Please repeat that.
Is this better still?	Was that *better*—pretty good.
Can you hear me now distinctly?	Instrument breaking a little.
Can you hear me now distinctly?	
Mr. Ott wants you to speak louder.	Say that again, louder.
Do you hear me now?	*Do you hear me now?*
Do you get it better now than before?	*Do you get it better now than before?*
Do you think you could hear me reading now?	Are you ready to go on with the *reading now?*
Benjamin, do you think you could hear me read now?	
What do you want?	Go on.

AMERICAN BELL TELEPHONE COMPANY, -4

Well, do you hear me?	I hear you.
How plainly?	Still breaks.
I will speak lower still—do you hear that?	I *hear that.*
Is it better than before?	No.
Is it better than before?	It is.
Let me speak lower still—now, do you hear this?	*Do you hear that?*
How plainly do you hear me now?	*Do you hear that now?*
Well, how plain is it?	How is this?
Now how plain is it?	*How plain is* this?
	The instrument broke on the word plain.
Well, I will speak lower still.	
Do you hear that?	*Do you hear that?*
I am speaking very loud—do you hear that?	Now *I am speaking very loud.*
Hallo Mr. Benjamin, hallo Benjamin.	*Hallo Benjamin.*
Is that plain?	*Is that plain?*
Plainer than before?	Better *than before?*
Do you think you could hear reading?	*Do you think you can hear reading?*
	I will try it.
Do you think you could hear me read now?	*Do you think you can hear me read now*—try it—go ahead.
Answer again, do you think you could hear me read now?	Go on.
What shall I do—read?	Go on.
Shall I read?	Too loud.
Shall I read?	*Shall I read?*
Our Washington despatches,	I am reading from a paper.
No, that was not what I said.	Well, tell me now what was said.
Our Washington despatches,	I will read something from a paper.
No, I didn't say anything like that.	(*A boy was here sent in to say that the instrument broke.*)
Hallo! what did you say?	
Can you hear me now?	*Do you hear me now?*
Can you hear me now?	*Do you hear that now?*
Is that better than before, or not?	*Is that better than before, or not?*
Well, I think it is, do you?	No.
I think that is better, is it not?	*That's better, is it not?* Yes.

Does it still break?	Too loud.
Does this still break?	Too loud.
Does this still break?	Too loud.
Does this still break?	Too loud.
Does this still break?	Too loud.
Does this still break?	Too loud.
Does this still break?	Too loud.
Does this still break?	Too loud.
Does this still break?	Too loud.
Does this still break?	Too loud.
Well, do you hear this?	Well, it is better now—still too loud.
I am speaking very low.	Too loud.
Well, I am speaking lower still.	Too loud; instrument breaks.
Well, I am speaking lower still.	Too loud.
Hallo!	Hallo!
Do you hear this?	Can *you hear* me now?
Is that better?	*Is that* any *better?*
I am speaking very low now.	*Well, I am speaking very low now.*
How is that?	
How is that—better?	*How is that—better?*
You seem to hear very well now.	Well, can you *hear* me *now*—pretty well.
You seem to hear very well now.	Well, can you *hear* me *very well now*—that sounds better.
You miss a word now and then, but get it very well.	Breaks.
Well, I will speak lower still.	*Well, I'll* see how it is.
Did you hear that?	
I will speak lower still, did you hear that?	*I will speak lower still, did you hear that*—it broke on the word still.
Can you hear me in this tone?	*Can you hear me in this* way?
Hallo!	*Hallo!*
It works better when speaking low than when speaking too high, does it not?	Instrument broke all through that.
Well, I will not speak so high.	Broke on the last word.
Do you hear that?	
Did you hear that?	*Did you hear that?*
I am now speaking very low indeed.	*I am speaking very low indeed.*
Could you hear me read in this tone?	
Can you hear me read in this tone?	*Can you hear me read in this tone?*

What do you think about it?	*What do you think about it?*
Well, tell Ott what you think about it.	Too loud.
Well, what do you think about it now?	*Well, what do you think about it now?*
I am speaking lower still.	That's better.
I am speaking not much above a whisper, do you hear it?	*I am speaking, do you hear* me?
I said I am speaking not much above a whisper, did you hear that?	Repeat that, please.
I am not speaking much above a whisper.	I didn't get the last part of it.
I said I am not speaking much above a whisper.	No, the instrument breaks.
I said I am speaking not much above a whisper—how is that?	*I said, I am speaking not much above a whisper.* I got that clearly.
I told a tramp to get out of here—did you hear that?	Still too loud.
I want first to see whether you hear.	*I want to see whether you hear.*
Did you hear?	*Did you hear?*
Well, shall I read now?	*Well, shall I read now?*
I will read from the New York Tribune, of yesterday.	*I will read from the New York Tribune, of yesterday.*
Our Washington dispatches continue to show—	Go on.
I was going to repeat all I said.	Did not get all of that; try it again.
You repeat back what I read, so that I will know whether you get it right or not.	
Did you hear that?	
I said, you repeat back what I read so that I can tell whether you get it all or not.	*I said, repeat what I read so that I can see whether you get it right or not.*
I will read.	Well, now, *I will read.*
Our Washington dispatches continue to show—	Repeat.
I was talking when you repeated that; repeat it again, please.	Repeat it again.
Our Washington despatches continue to show	Go ahead with the reading.

I am going on now, why the devil don't you hear?	Go ahead with your reading.
Our Washington despatches continue to show	No.
You seem to get everything but reading, what's the trouble with that?	No.
Tell the man at the telephone to speak louder to Mr. Ott.	*Tell the man at the telephone to speak louder to Mr. Ott.*
Now I'm going to read a little, do you hear that?	Well, *I am going to read a little, do you hear that?*
Our Washington dispatches continue to show a gradual	No.
I will read something about Ben Butler, do you get that?	*I will read something about Ben Butler.*
Benjamin F. Butler, of Massachusetts, was in this city on Tuesday.	No.
Benjamin F. Butler, of Massachusetts, was in this city on Tuesday.	*Benjamin F. Butler, of Mass.*
Was in this city on Tuesday,	No.
Was in this city on Tuesday,	No.
and spent the day in receiving callers.	No.
Why the devil can't you hear when I read as well as you can when I talk?	*Why the devil can't you hear me when I read as well as when I talk?*
Does the word devil go through straight?	Not heard.
Hallo! hallo! I asked, does the word devil go through straight?	Hallo!
Well, I ask you does the word devil go through straight?	No.
Do you hear that?	*Do you hear that?*
I am now talking not much above a whisper again—do you hear that?	No.
I am now talking not much above a whisper.	*I am now talking not louder than above a whisper.*
Well, you get that pretty straight—do you hear that?	*Well, you got that pretty straight.*
It is expected that Judge Blatchford will leave this city on Friday.	No.

It is expected that Judge Blatchford will leave this city on Friday.	*It is expected*—that's all that I could get.
Judge Blatchford.	Of the telphone.
Judge Blatchford.	No.
Judge Blatchford.	No.
Judge Blatchford.	No.
Well, can you hear me now?	*Well, can you hear me now?*
I said Judge Blatchford.	No.
It is expected that Judge Blatchford on Friday—to take his place on the Supreme Court Bench.	*It is expected that*—ask him if he said Judge Blatchford.
Transmit that over here again.	Repeat it.
We don't hear the whole.	
Ott wants to hear that again.	
Ott wants to hear that again.	Who is talking into the other machine?
Stop talking and go on with business.	
Let me talk again.	
Well, do you hear me now?	
Hello, hello, Benjamin.	

This test of "F reproduced" and the Tisdel receiver lasted 20 minutes, and that of "F reproduced" and the Bell magneto receiver 50 minutes. This experiment, lasting one hour and 10 minutes, most of the time with the best modern receivers, showed the inherent vice of an instrument of the type of F, even with the material improvements adopted in "F reproduced." The whole test, like that of "F reproduced" with "B reproduced and also with "A," was a continual trial for adjustment. The listener had sufficient skill and understanding to indicate to the skilled operator at the transmitting instrument when it should be adjusted, and whether higher or lower, whether the voice should be louder or softer, or whether the speaker should place his mouth closer to or further from the instrument. This would have been impracticable had either operator been unskilled, and equally impracticable if the tell-tale line had not been available.

Occasionally, by what can hardly be considered more than a happy accident, the exact condition of adjustment was reached, and sentences would come through the improved modern receiver with success, but the mere effort of speaking would throw the instrument out of adjustment after a sentence or two, in spite of the most careful modulation of the voice. It was thus apparent from this trial that the sensitiveness of the improved Bell magneto receiver enabled the listener to recognize sounds and words that would have been unintelligible with such instruments as

"B reproduced" and "A," and thus to adjust the transmitter with greater pressure, which gave a more stable condition and greater freedom from breaks while the feebleness in the effects which was the necessary consequence of that condition, was yet sufficient to give audible results with the sensitive receiver, though insufficient to produce sensible effects with the ruder receivers; yet no matter how efficient the receiver was, no apparatus which had "F reproduced" for its transmitting member would be of any practical utility for the transmission of intelligence.

"C Reproduced."

"I Reproduced."

"C reproduced" was tried with the best modern Bell magneto instrument, both as a receiver and as a transmitter. "I reproduced" was also tried with the modern magneto Bell instrument, as follows:

The first trial was made with "C reproduced" as a transmitter and the Bell magneto as receiver, without any battery in circuit. This test lasted 15 minutes. At first only detached words and parts of sentences could be distinguished, but afterwards a newspaper paragraph of 34 words was transmitted with only one error. These sentences were deaconed out 4 or 5 words at a time, and first repeated by Drawbaugh in a loud voice into the transmitter. Afterwards Hill himself spoke to the transmitter in a loud, clear, and measured voice.

The next trial was made with the Bell magneto as transmitter and "I reproduced" as receiver, without battery, F. W. Smith speaking in a moderately loud tone; afterwards Mr. Hill took his place. Only detached words and portions of sentences could be made out by Mr. Benjamin at the receiver.

"I reproduced" was also tried as a transmitter with the Bell magneto as receiver during the above time, Prof. Wright speaking and Mr. Benjamin listening. The result was much the same as before, sentences being partly understood after one or two repetitions.

"E and a Bell magneto receiver were tried on the last day, and made a practicable couple. "E", however, is quite an inferior instrument, as might be expected from its construction, especially the size and disposition of its permanent magnet. Two instruments like "E" would be worth using if nothing better were to be had.

The Instrument "O."

This is one of the instruments alleged to have been made after the date of the Bell patent.

It was tried on the afternoon of the second day, with the following results:

It had been refitted and put in perfect order by Mr. Drawbaugh.

'O' and 'A'. Some newspaper paragraphs attempted. One about coal operators at Pittsburg could not be got through; some other sentences could not be got through; others, and quite long ones, were got through intelligibly by 133 repetitions of from two to five words each, and constant re-adjustments.

Mr. Hill talked with his usual care and Mr. Benjamin listened.

Newspaper sentences attempted to be transmitted by the use of 'O' and 'A' on the afternoon of the second day.

From the Boston Daily Advertiser, March 22, 1882.

"Personal. General Grant and wife arrived at the White House to-night on their long-expected visit to the President. John Russel Young, the newly appointed Minister to China, came with them.

"Owing to the President's numerous engagements, he finds it impossibe to give a reception to the Massachusetts Excursionists now in the city.

"General Press Dispatches. W. E. Dickinson, of Chicago, waited upon the President to-day, and presented the monster petition from citizens of Illinois, for executive clemency in the case of Sergeant Mason. He was accompanied by representatives Aldrich and Farwell, and had a pleasant interview. The President said he would consider the case."

A paragraph about the small-pox at Bethlehem furnished the material for the next attempt, but nothing could be transmitted.

"The Railroad Coal Exchange of Pittsburgh, Pa., has ordered a reduction of one half per cent. per bushel in mining scales. This action will affect over three thousand miners." The first of these two sentences was got through imperfectly after a very large number of repetitions; the second was not attempted.

"Despatch to take charge of Lena received. I met Danenhower here. Will report after further conversation. His five men are essential to conduct search in the Lena." This could not be got through intelligibly and no attempt was made to transmit the rest of the paragraph.

"Mr. McClure of Ohio spoke in favor of the bill. Mr. Bayne of Pennsylvania also supported the Bill."

"Washington, March 21, 1882. In the Senate to-day, pending a motion to take up a bill just reported from the Finance Committee to amend a section of the revised statutes, Mr. Hoar very pertinently called atten-

tion to the fact that the title conveyed no intimation as to the subject. It seemed to him that there ought to be a rule of the Senate prohibiting the reporting of bills with titles which do not indicate their purport, so that the country, through the press, may be informed in every instance as to the status of legislation. The Bill was not taken up."

The next was a long article from the same newspaper about the expected nomination of Senator Teller to the Cabinet. This was transmitted intelligibly, though with many repetitions.

P. M. Second Day "O" & "A."

Notes of Mr. Rydall. Mr. Hill speaking into "O."	Notes of Messrs. Jacques & Rydall, and Mr. Donahoe. Mr. Benjamin listening at "A."
What receiver have you on now?	Repeat.
What receiver?	We have got instrument "A" on.
I will count a few numbers in order to get the right distance for me from the transmitter.	Too weak—come closer to transmitter.
I will count a few numbers in order to get the right distance for me from the transmitter.	Repeat it.
I will count a few numbers and get the right sound and distance.	*I will count a few numbers and get the right sound and distance.*
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	*1, 2, 3, 4, 5, 6, 7, 8, 9, 10.*
Do you hear that?	*Do you hear that?*
Was it distinct?	
1, 2, 3, 4, 5, 6, 7, 8, 9, 10—did you get that?	Get nearer.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10—did you get that?	
Now I will read from the newspaper	*Now I will read from the newspaper*
Repeat back	
Personal	No
Personal	No—repeat.
Personal	Don't understand the word; say it again.

(Reading from Boston Daily Advertiser, March 22, 1882.)

General Grant and his wife arrived at the White House	*General Grant and his wife arrived at the White House*
to-night	*to-night*
On their long expected visit to the President.	
On their visit to the President	*on their visit to the President*
John Russell Young	*John Russell Young*
The newly appointed Minister	*The newly appointed Minister*
to China	*to China*
came with them	*came with them*
Owing to the President's numerous engagements	*Owing to the President's numerous engagements*
he finds it impossible to give a reception	*he finds it impossible to give a reception*
to the Massachusetts Excursionists now in the city	*to the Massachusetts Excursionists now in the city*
General Press Despatches	*General* who?
General Press Despatches	No
General Press Despatches	*General —— Despatches*
General Press Despatches—General Press	*General Press Despatches*

(Reading from Boston D. A., March 22, 1882.)

W. E. Dickinson of Chicago	No
W. E. Dickinson of Chicago	
W. E. Dickinson of Chicago	No
W. E. Dickinson of Chicago	*W. B. —— of Chicago*
waited upon the President to-day	*The President to-day*
and presented a monster petition	*Presented a monster petition*
from citizens of Illinois	*from citizens of Illinois*
for executive clemency	*for executive clemency*
in the case of Sergeant Mason	*in the case of Sergeant Mason*
He was accompanied by Representatives Aldrich and Farwell	*He was accompanied by Representatives* Landers *and* Barwell
He was accompanied by Representatives Aldrich and Farwell	*He was accompanied by Representatives* Landers *and* Barwell
Aldrich and Farwell	Eldridge *and* Barwell
Aldrich and Farwell	

A-l-d-r-i-c-h	No, don't get it.
A-l-d-r-i-c-h and Farwell	*Aldrich and Farwell*
and had a pleasant interview.	They *had a pleasant interview.*
The President said he would consider the case.	*The President said he would consider the case.*
Do you want some small-pox literature?	*literature.*

(Taking up Boston Daily Advertiser, March 22, 1882.)

Do you want some small-pox literature?	*Do you want some —— literature?*
Small-pox.	No.
Can't you get the small-pox?	
You must have been vaccinated.	No.
You don't get the small-pox.	
Small-pox literature.	No.

(Reading from Boston Daily Advertiser, March 22, 1882.)

The Railroad Coal Exchange, of Pittsburgh, Pa.	*Pittsburgh, Pa.*
Railroad Coal Exchange, of Pittsburgh, Pa.	No.
Railroad Coal Exchange, of Pittsburgh, Pa.	*Railroad—of Pittsburgh, Pa.*
Railroad Coal Exchange, of Pittsburgh, Pa.	No.
Railroad Coal Exchange, of Pittsburgh, Pa.	*Railroad*—(breaks after the word railroad.)
Railroad Coal Exchange, of Pittsburgh, Pa.	Too far off; can't get it.
The Railroad Coal Exchange, of Pittsburgh, Pa.	*Railroad*—something—*Pittsburgh, Pa.*
The Railroad Coal Exchange, of Pittsburgh, Pa.	No.
Has ordered a reduction of one half cent per bushel in mining scales.	*Has ordered a reduction of one half cent per bushel.*
Has ordered a reduction of one-half cent per bushel in mining scales.	Too far off.
Has ordered a reduction of half a cent per bushel in mining scales.	Too far.
Has ordered a reduction of half a cent per bushel in mining scales.	Too far.

AMERICAN BELL TELEPHONE COMPANY, -4

Has ordered a reduction of one-half cent per bushel in mining scales.	No.
Has ordered a reduction of one-half cent per bushel in mining rates.	The mileage *rate.*
(Instruments adjusted).	
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	Not a sound of any kind.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, how is that?	Not a sound of any kind.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	Heard the counting.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	Try it on that.
The Railroad Coal Exchange of Pittsburg, Pa.	*The railroad* something.
Coal Exchange.	No.
Coal.	No.
k–o–a–l.	Spell it again.
k–o–w–l.	No.
k–o–u–l.	Can't get anything but "a."
k–o–u–g–h–l.	Re-adjust.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	*1, 2, 3, 4, 5, 6, 7, 8, 9, 10*—Counting was very fair.
See if you can get Railroad Coal Exchange.	Can't get the word after "*Railroad.*"
C–o–a–l.	No
C–o–a–l.	No.
C–o–a–l.	No.
C–o–a–l.	No.
Are you listening now?	Yes—go ahead.
I will read a dispatch—here it is.	*I will read a dispatch—here it is.*
(Reading from Boston Daily Adv. Mch. 22, 1882.)	
Dispatch to take charge of Lena re-received.	
Dispatch to take charge of Lena received.	*Dispatch* of—*received.*
I met Dannehower here.	No.
I met Dannehower here.	I *met Dannehower here.*
Will report after further conversation.	*Will report after further conversation.*
His five men are essential to conduct search in the Lena.	If my men are healthy will continue the *search in the* winter.
(Further adjustments were made. Mr. Benjamin stops him through the tell-tale line when the sound comes right.)	Mr. Hill counted while adjusting, and

1, 2, 3, 4, 5, 6, 7, 8, 9, 10.	
Do you hear me plainly?	*Do you hear me plainly?*
Do you hear me more plainly than you did before?	*Do you hear me* plainer *than you did before?*
Are you almost tired of listening?	*Are you most tired of listening?*
What time is it in that front room?	Repeat.
What time is it in that front room?	*What time is it in* the *front room?*
Let me give you some Congress news.	No.
Let me give you some Congress news.	No—repeat again.
Let me give you some Congress news.	No.
Let me give you some Congress news.	No; repeat.
I will give you some Congress news.	*I will give you some Congress news.*
Mr. Clure, of Ohio, spoke in favor of the bill.	*Mr. . . . , of Ohio, spoke in favor of the bill.*
Mr. Bain, of Pennsylvania, also supported the bill.	. . . reported in favor of *the bill.*
Mr. Bain, of Pennsylvania, also supported the bill.	*Mr. . . . , of Pennsylvania.*
Mr. Bain.	
1. 2, 3, 4, 5, 6, 7, 8, 9, 10.	
How is that?	That is good; get along.

(Reading from Boston Advertiser, March 22, 1882.)

Washington, March 21, 1882.	*Washington, March 21, 1882.*
In the Senate to-day	*In the Senate to-day.*
pending a motion to take up a bill	No.
pending a motion to take up a bill	*pending a motion to take up a bill*
just reported from the Finance Committee	*just reported from the Finance Committee*
to amend a section of the Revised Statutes	*to amend a section of the Revised Statutes*
Mr. Hoar very pertinently called attention	*Mr. Hoar very pertinently called attention*
to the fact that the	*to the fact that the*
title conveyed no intimation	*title conveyed no intimation*
of the subject	*of the* project
Subject.	Adjust.

AMERICAN BELL TELEPHONE COMPANY, -4

Subject.	Projeet.
Subject.	*Subject.*
It seemed to him that there ought to be a rule of the Senate	*It seemed to him there ought to be a rule of the Senate*
prohibiting the reporting of bills with titles	*prohibiting the reporting of bills with titles*
which did not indicate their purport	*which do not indicate their purport*
so that the country through the press	No.
so that the country through the press	No.
So that the country through the press	No.
So that the country through the press	No.
So that the country through the press	No.
So that the country through the press	No.
So that the country	No, can't do it.
so that the country	It sounds like "to."
so that the country	Than to *the country.*
so that the country	No, don't get it.
so that the country	No.
so that the	Still the same thing.
so that	No.
so that	Can't get the first word.
So	
So	
S–o	
S–o	*S–o, so.*
So that the country	*So that the country* will be
through the Press	
through the Press	*Through*
P–r–e–s–s	
P–r–e–s–s Press	*The Press*
may be informed in every instance as to the state of legislation—the bill was not taken up.	*May be informed in every instance as to the status of legislation; the bill was not taken up.*

(Instruments adjusted.)

1, 2, 3, 4, 5, 6, 7, 8, 9, 10.

Can you hear that plainly?

(Instruments adjusted.)

1, 2, 3, 4, 5, 6, 7, 8, 9, 10.

It appears to be as certain as anything of the kind can be	*It* ought *to be* as perfect *as anything of the kind can be*
No, that was not right.	*No, that's not right.*
It appears to be as certain as anything of the kind can be	No.
It appears to be as certain as anything of the kind can be	*It appears to be as* perfect certainly
It appears to be as certain as anything of the kind can be	*It appears to be as certain as anything of the kind can be*
before it is accomplished	*before it is accomplished*
that Senator Henry M. Teller of Colorado	*that Senator Henry M. Teller of Colorado*
is to be appointed Secretary of the Interior.	*is to be appointed Secretary of the Interior.*
When it was first intimated	*When it was first intimated*
among the knowing ones	*among the knowing ones*
that a western man	*that a western man*
who had not been mentioned in connection with a Cabinet position	*who had not been mentioned in connection with a Cabinet position*
was to be given that department	*was to be given that department*
there was at once much curiosity in in the matter.	*there was at once much curiosity in the matter.*
While the Senator does not affirm or deny	*While the Senator does not affirm or deny*
the truth of the report	*the truth of the report*
the matter has been pretty thoroughly canvassed during the day,	*the matter has been pretty thoroughly canvassed during the* few *days,*
during the day,	*during.*
and the conclusion is	*and the conclusion is*
that there is no doubt about it	*that there is no doubt about it.*
Mr. Teller is now serving his second term	*Mr. Teller is now serving a second term,*
and is near its end	*and is*
and is near its end.	nearly at *its end.*
If he goes into the Cabinet	He will go *into the Cabinet*
If he goes into the Cabinet	No.
If he goes into the Cabinet	*If he goes into the Cabinet*
he may not seek re-election	No.

he may not seek re-election	Too weak—make it stronger.
he may not seek re-election	No.
he may not seek re-election	No.
he may not seek re-elctioen.	It will *not* be.
If he goes into the Cabinet	*If he goes into the Cabinet*
he may not seek re-election.	*he may not*
If he goes into the Cabinet he may not seek re-election.	*He may not* see—
Seek	See
S-e-e-k	*May not seek*
seek a re-election.	*seek* a good connection
re-election.	*may not seek a re-election.*
On the other hand	*On the other hand*
he may think his chances of re-election improved.	*his chances of re-election* are good.
His chances of re-election improved.	It may
His chances of re-election improved.	No.
Not right, but I will go on.	*Not right.*
He may think his chances of re-election improved.	*He may think his chances of re-election improved.*
He is a man of fair	*He is a man of fair*
but not distinguished ability.	*but not distinguished ability.*
Very positive in his opinions	*Very positive in his opinions*
and an industrious business man.	*an industrious business man.*
His views on the Indian question are pretty well known.	*His views on questions are pretty well known.*
His views on the Indian quest on	*His views on the Indian question*
are pretty well-known.	*are pretty well known.*
while he appears to be disposed to be just	where *he appears disposed to be just.*
he is not favorable to the propositions	*he is not favorable to the proposition*
that have lately received attention.	*that has lately received attention.*
He is not favorable to the propositions	
that have lately received attention.	*that has lately received attention.*
And appear to be growing in favor	it *appears to be growing in favor.*
Last winter he strenously opposed the measure.	He is strongly *opposed* to the *measure.*
Last winter he strenously opposed the measure.	to *the measure.*

for giving the Indian lands in severalty.	*for giving the Indian lands in severalty.*
That sentence begins with the words This winter.	*That sentence begins with the words Last winter.*
Now I will go on with the next sentence.	*Now I will go on with the next sentence.*
He has little patience with some of the theories.	

(Further adjustment of Instruments.)

This attempt lasted an hour and a quarter.

About 300 words were transmitted in an hour and a quarter.

The results with the "O" as transmitter and the Tisdel and the Bell magneto as receivers were somewhat better, but not very materially different.

TESTS WITH TRANSMITTER H.

First day: "H" and Tisdel, "H" and "B reproduced," "H" and "A."
Second day: "H" and "E," "H" and "A."

"H" AND "A."

First Day.

These tests were from 5.04 until 6.50, an hour and three quarters, with one short interruption when a Bell magneto and "A" were used. Not enough of any single complete sentence was transmitted to convey an intelligible idea. All that was transmitted during this time was the following; words heard correctly are in italics.

"You hear that," "Is about . . . feet from *the dia*phragm;" of these, "the diaphragm" were the only words spoken.

"*Are you ready?*"—part of a long sentence.

"*Can you hear me distinctly?*"

"*I can not* speak;" phrase spoken was, "I can not see why not."

"*Short interest*," "*Saturday night*"—parts of a sentence.

"*Mr. Benjamin, answer me through your instrument*"—being about half the sentence spoken.

"*Notwithstanding . . . the abilities . . . them*"—parts of a sentence.

"*One of the . . . citizens* reached 90th *year*"—part of a long sentence; words in italics were spoken, the others were not.

"*Telescope*," "*Comet*"—parts of a sentence.

"Stranger *and non-commissioned officer . . .* has not the under *the prisoner*"; parts of a paragraph which contained the words in italics but not the others.

1360 POPE—"H" & "A"; "H" & "B REPR."; "H" & E."

"About 6 *o'clock Afternoon Upon the river*"; parts of a long sentence.

Next, understood one word in a long sentence.

"My son testified that in *feeling*"; part of a sentence. *Feeling* was the only one of the foregoing words which was spoken.

"When will the station be *feeling.*" Ditto. Phrase was "We will be patient and assuage the feeling, we may not wholly stay."

"The sun is up." Third repetition of same sentence which, however, did not contain these words.

"The sun was" Several more repetitions of same sentence which was not at all understood.

"*Mr. Blaine* . . . to be . . . and in this proportion inside . . . something *freely.*" Parts of a long sentence which did not contain any of the foregoing words except those in italics.

"*Mr. Blaine* from *Peru*; parts of a long sentence.

"*Mr. Longfellow's death* without disturbance."

"Can *you hear me now*" (Do you) &c.

"*Just*"—

Then a long newspaper paragraph was read, from which the only words understood were

"*The ladies said.*"

Sixty-seven words but no sentence in one and three quarter hours.

"H" as transmitter and "B reproduced" as Receiver—First day.

Regular counting 1–10 heard twice: Prof. Cross listening thought he heard "Do you hear me distinctly" and another thought he heard "Do you understand distinctly"; these were not exactly the phrases spoken.

This test continued about 10 to 15 minutes.

"H" as Transmitter and "E" as Receiver.

Second Day.

This attempt was made with the utmost care. Mr. Benjamin listened in the closet in the front room. The transmitter was fastened to the rear wall of the building and Mr. Hill spoke into it with a voice and utterance of peculiar clearness and evenness, with the utmost care to prevent "breaks" in the instrument. He thus read and Mr. Banjamin understood a long newspaper article requiring about twenty-five phrases or words to be repeated an average of three times each. This apparatus could be successfully used by experts of skill and training, but is totally impracticable for ordinary use by the public as telephones are used; this was shown by the next test.

Mr. Drawbaugh undertook to transmit the following newspaper paragraph:

"Massachusetts Factory Operatives.

"This year's report of the Massachusetts bureau of the statistics of labor is devoted more largely than usual to subjects of purely local concern. Some of the figures are, however, of general interest. The first subject discussed is the constantly increasing Canadian-French population. In the last report of the bureau some very sweeping, and, as now appears, very unjust remarks were made about these people. They were denounced as dirty, ignorant, and immoral, and, in order to take all this back, nearly one hundred pages are required. They may well feel proud of the showing they make here, and native New England must feel a sense of relief at learning that they are rapidly assimilated to the rest of the population."

This paragraph was read by Mr. Hill to Mr. Drawbaugh, three or four or five words at a time, which were by Mr. Drawbaugh repeated into the transmitter with his best care. Scarcely a word was understood without a large number of repetitions, and often spelling. After occupying fifty minutes 112 words were transmitted. To do this 550 words were uttered into the transmitter, and 17 more were spelled. The last two lines were abandoned by Mr. Drawbaugh with the remark: "They can't understand me; I might as well give it up."

The following is an account of this attempt:

Transmitting room. Mr. Drawbaugh speaks into Transmitter "H."	Receiving room. Mr. Benjamin listens at receiver "E."
Mass. factory operatives	Once more.
Mass. factory operatives	Too faint, don't get it.
Mass. factory operatives	Repeat.
Mass. factory operatives	Yes, what is the rest of it. *Mass.*,
Mass. factory operatives	that is all we get.
factory operatives	No.
factory	*Factory*
operatives	*operatives*
This year's report	Repeat.
This year's report	Too near the instrument.
This year's report	No.
This year's report	Something before the courts.
report	*Report*

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This year's report	Something before report
This year's report	Don't know what you say before report
This year's report—this year's	Don't know what it is
This year's report	These reports
T–h–i–s	Spell it again
T–h–i–s	*This*
year's report	*year's report*
of the Massachusetts bureau of statistics of labor	*of the Massachusetts bureau of statistics*
is devoted more largely	Repeat that
is devoted more largly than usual	What is before unusual?
than—is devoted more largely than usual	*more largely than usual*
is devoted more largely than usual	*—more largely*
is devoted	
is devoted	*Is devoted.*
to subjects of purely local concern	What before "*purely local*"
to subjects	What after local
Concern—concern	*To subjects of purely local concern*
Some of the figures	*Some of the*—what
figures	No.
figures	No.
figures	Some of what
figures	Spell it
f–i–g–u–r–e–s	Repeat it
f–i–g–u–r–e–s	Once more
f–i–g–u–r–e–s	*Figures*
are however.	*are however.*
of general interest.	*of general interest.*
The first subject discussed.	*The first subject discussed.*
is the constantly increasing	*is the*—what?
constantly increasing.	No.
constantly increasing.	*constantly increasing.*
Canadian French population.	What is before "*population?*"
Canadian French.	No.
Canadian.	Emigrant.
Canadian French population.	Emigrant *population.*
Canadian French.	*Canadian.*
French—coming from France.	Nothing *from France.*
Canadian French—coming from France.	*Coming from France.*

Population of New England.	*Population of* two million.
of New England.	From *New England.*
of New England.	*Of New England.*
In the last report of the bureau.	*In the last report of the bureau.*
some very sweeping.	What?
some very sweeping.	No.
some very sweeping.	No.
some very sweeping.	from French speaking.
some very sweeping.	No.
some very sweeping.	No.
some very sweeping.	No.
some very sweeping.	Give us the sentence with it in.
In the last report of the bureau some very sweeping and as it now appears very unjust remarks were made about these people	*In the last report of the bureau some very sweeping*
And as now appears	*And now appears*
As now appears	*As now appears*
very unjust remarks	*very unjust remarks*
were made about these people	What?
were made about these people	*About this people*
were made	*were made about these*
were	*people*
See if you can get the word you lost	No.
In the last report of the bureau	*If the report of the bureau*
some very sweeping	something *very*
some very	*some very*
sweeping	Don't know what that is.
sweeping	No.
sweeping	No.
sweeping	No.
s-w-e-e-p-i-n-g	Once more.
s-w-e-e p-i-n-g	*sweeping* that is it.
They were denounced	sweeping
They were denounced	What is after sweeping?
They have got it all but I will read it again.	
and as now appears	*and as now appears*
very unjust remarks	*very unjust remarks*
were made about these people.	*were made about these people.*
They were denounced	

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They were denounced	No.
They were denounced	Announced.
They were denounced	No.
They were denounced	Who *were denounced?*
They	
They	
T-h-e-y	
T-h-e-y	*They were denounced*
as dirty	*as* what?
dirty	*dirty*
ignorant	*ignorant*
and immoral	*and immoral*
and in order	*and in* a manner
and in order	*and in order*
to take all this back	to get
to take	to get
t-a-k-e	No.
to take	Spell it.
take, t-a-k-e	*take*
all this back	What is before "*back?*"
all this	No.
all this back	*all this back*
nearly 100 pages	*nearly 100 pages*
are required	*are required*
They may well feel proud	No.
They may well feel proud	No.
They may well feel proud	Feeling very well
They may well feel proud	No.
They may	Being very well
That's not right.	
They may well feel proud	No.
They may well feel proud	What is before "very well?"
They may well feel proud	No.
They may well feel proud	No.
They may well feel proud	No.
They, did you get that?	Don't understand.
They	No.
T-h-e-y	
Who is listening?	Not listening—wait a minute.
They may well feel proud	No.
They may well feel proud	*Well—proud.*

feel proud	No.
feel proud	No—don't get it.
Feel, do you get that?	Don't know what the word is.
feel—feel—feel,	Understood you to ask if I got it, but I didn't.
feel proud	No.
feel proud	No.
f–e–e–l	It sounds like feeling *proud.*
f-e-e-l	No
feel proud	No
Not feeling, but feel	*But?*
feel proud	Repeat
feel proud	Some words I can't get
feel proud is the word	Go ahead with the next clause
of the showing	And *the what?*
of the showing	and *the showing*
of	
of the showing	*Of the* what?
showing	And *the showing* of the
of the showing	No
of the showing	
of	and
not *and* but *of* the showing of	as
not *as* but *of*, *o-f*	*of the showing*
they make here	the next year
they make here	No
they make here	worse
they	
they make here	I think the instrument is out of adjustment.

Here Mr. Hill spoke a few general phrases through the transmitter and Mr. Drawbaugh resumed as follows:

Mr. Benjamin, do you hear me now?	Yes.
Shall I go on with the article	I heard him now
Do you hear me distinctly?	Yes—*distinctly*
Shall I go on with the article?	Yes, go on.
I will go on then.	*I will go on then*
Now listen	*Now listen*
They make here	No.
They make here	Can't get it
They make here	"A late paper"

They	
T–h–e–y	
They make here	" A late beer "
No beer here	Spell it
They make here—h–e–r–e	" *Here* "
Have you got the three words—*They make here?*	" *Here* "
They make	No.
They make here	No.
The two first words are " they make "	*The first two words* were what?
They make	
They make here	No.
They make here	No.
They make here	No.
I will go on with the rest	
Mr. Benjamin	Go ahead.
And native New England	" And something to *England* "
and native New England	In *New England*
and native New England	No.
and native New England	*And native New England*
must feel a sense of relief	" But the respect *of* "
must feel a sense of relief	But the respect *of relief*
must feel a sense of relief	No.
must feel a sense of relief	*Must feel a sense of*
They can't understand me—might as well give it up.	We would like to have some one else.
[The remaining words of the paragraph are not attempted by Mr. Drawbaugh.]	

[The foregoing is substantially Mr. Rydall's report corrected by striking out all repetitions which are not supported either by the notes of Mr. Jacques or Mr. Marx and adding a few passages in which both Mr. Jacques and Mr. Marx agree.]

Mr. Hill then repeated the same paragraph to the same listener; by thirteen repetitions of clauses it was understood—*i. e.*, 161 words were uttered in order to transmit 125 words.

Mr. Hill then spoke to Mr. Jacques.	Mr. Jacques listening.
Mr. Jacques are you at the instrument now?	Don't understand that.
Mr. Jacques are you at the instrument now?	No.

Mr. Jacques are you at the instrument now?	No.
Do you hear me distinctly?	No.
Please repeat—do you hear me distinctly?	No.
Please repeat—do you hear me distinctly?	No.
Do you hear me distinctly?	Don't get it.
Distinctly	Don't get it.
Distinctly	Spell it.
D–i–s–t–i–n–c–t–l–y	Try it again.
D–i–s–t–i–n–c–t–l–y	That is it.
I will speak a little lower, see whether you hear me better.	Don't understand it.
I will speak a little lower	*I* have—
I will speak a little lower	*Will speak*
a little lower.	Don't understand.
In a lower tone of voice	Don't understand.
In a lower tone of voice	No.
In a lower tone of voice	No.
Do you hear me better now?	Take some unexpected sentence.
What do you think of Queen Victoria?	No.
What do you think of Queen Victoria?	No.
What do you think of Queen Victoria?	No
What do you think of Queen Victoria?	No.
What do you think of Queen Victoria?	No.
I was too far from the instrument, probably—do you hear better now?	
I will give you another sentence.	
How would you like to have the bonds Jay Gould showed his friends the other day?	*How would you like to have the*
How would you like to have the bonds that Jay Gould showed his friends the other day?	*How would you like to have the* bargains which *Jay Gould showed his friends the other day?*
Not the bargains but the bonds.	The blanks.

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They	
T–h–e–y	
They make here	"A late beer"
No beer here	Spell it
They make here—h–e–r–e	"*Here*"
Have you got the three words—*They make here?*	"*Here*"
They make	No.
They make here	No.
The two first words are "they make"	*The first two words* were what?
They make	
They make here	No.
They make here	No.
They make here	No.
I will go on with the rest	
Mr. Benjamin	Go ahead.
And native New England	"And something to *England*"
and native New England	In *New England*
and native New England	No.
and native New England	*And native New England*
must feel a sense of relief	"But the respect *of*"
must feel a sense of relief	But the respect *of relief*
must feel a sense of relief	No.
must feel a sense of relief	*Must feel a sense of*
They can't understand me—might as well give it up.	We would like to have some one else.
[The remaining words of the paragraph are not attempted by Mr. Drawbaugh.]	

[The foregoing is substantially Mr. Rydall's report corrected by striking out all repetitions which are not supported either by the notes of Mr. Jacques or Mr. Marx and adding a few passages in which both Mr. Jacques and Mr. Marx agree.]

Mr. Hill then repeated the same paragraph to the same listener; by thirteen repetitions of clauses it was understood—*i. e.*, 161 words were uttered in order to transmit 125 words.

Mr. Hill then spoke to Mr. Jacques.	Mr. Jacques listening.
Mr. Jacques are you at the instrument now?	Don't understand that.
Mr. Jacques are you at the instrument now?	No.

Mr. Jacques are you at the instrument now?	No.
Do you hear me distinctly?	No.
Please repeat—do you hear me distinctly?	No.
Please repeat—do you hear me distinctly?	No.
Do you hear me distinctly?	Don't get it.
Distinctly	Don't get it.
Distinctly	Spell it.
D–i–s–t–i–n–c–t–l–y	Try it again.
D–i–s–t–i–n–c–t–l–y	That is it.
I will speak a little lower, see whether you hear me better.	Don't understand it.
I will speak a little lower	*I* have—
I will speak a little lower	*Will speak*
a little lower	Don't understand.
In a lower tone of voice	Don't understand.
In a lower tone of voice	No.
In a lower tone of voice	No.
Do you hear me better now?	Take some unexpected sentence.
What do you think of Queen Victoria?	No.
What do you think of Queen Victoria?	No.
What do you think of Queen Victoria?	No
What do you think of Queen Victoria?	No.
What do you think of Queen Victoria?	No.
I was too far from the instrument, probably—do you hear better now?	
I will give you another sentence.	
How would you like to have the bonds Jay Gould showed his friends the other day?	*How would you like to have the*
How would you like to have the bonds that Jay Gould showed his friends the other day?	*How would you like to have the* bargains which *Jay Gould showed his friends the other day?*
Not the bargains but the bonds.	The blanks.

B-o-n-d-s bonds.	It might be "*bonds.*"
It is bonds.	What?
It is bonds.	*Bonds.*
You have got it right.	No.
You have got it right now.	No.
You have got it right now.	No.
You have got it right now.	You have—
got it right now.	*You have got it right now.*
How would you like them?	No.
How would you like them?	
	Ask Drawbaugh to speak a minute, please.
Drawbaugh speaks.	
Mr. Jacques, Drawbaugh is speaking now; can you hear me distinctly?	*Mr. Jacques, Drawbaugh is speaking now; can you hear me?*
Can you hear me distinctly?	*Can you hear me*—what?
Distinctly.	No.
Distinctly.	No.
Distinctly.	
Well, what do you want?	
Well, what do you want?	Let D. give an unexpected sentence.
Mr. Jacques, it is getting time to take a lunch. Do you understand that? Don't you feel so?	*It is time to take a lunch*
Adjourned for lunch.	

After this Mr. F. A. Klemm, one of the defendants, a telephone inventor, and constructor of the infringing instruments, and, therefore, presumably an expert, spoke into "H." He got through a few lines by dint of rather numerous repetitions.

After lunch Mr. Hill read to Mr. Benjamin with the same precautions, and the latter understood a newspaper report of Congressional proceedings, with some, but not many, repetitions.

F. W. Smith spoke to Mr. Jacques; both were experts, and accustomed to careful testing with each other. Mr. Hill spoke to Mr. Pope; in both cases the transmission was fair enough to make the apparatus practicable for the transmission of intelligence in the hands of experts with specially skilled speakers.

RESULTS OF NEW YORK EXPERIMENTS MADE WITH COUPLES OF INSTRUMENTS *both* MEMBERS OF WHICH HAVE BEEN CONSTRUCTED SINCE MARCH 7, 1876.

Pairs of Instruments thus tested.

"H" & Tisdel. "O" & Tisdel. "O" & Bell Magneto.

"H" as transmitter and Tisdel as receiver were tried about 20 minutes on the first day, apparently for the purpose of adjusting "H." Counting could be partially made out. A great many sentences were spoken during that time, of which but fragments could be made out. One sentence was understood as follows: "Now I am about three feet away from the instrument, speaking in a clear, loud tone of voice."

Messrs. Benjamin, Drawbaugh, and Ernest Marx at transmitter. Messrs. Cross and Benjamin at receiver.

"O" as transmitter and Tisdel as receiver, were tried in the afternoon of second day. Four lines of newspaper were understood, during which ten repetitions of words were called for.

"O" as transmitter and Bell magneto as receiver, were then tried. Three lines of newspaper were understood with three repetitions of words.

Q. 81. Comparing the results obtained by using the couple "F reproduced" and "B reproduced," with those obtained by using the couples in which "F reproduced," was the transmitter and the modern instruments—the Bell magneto or the Tisdel—were used as receivers, as set forth in your last answer, I find that somewhat better results were obtained when the modern and more perfect receivers were used. I now ask you whether either of these last-named couples, of which "F reproduced," was the transmitting member, and one of these more modern instruments was the receiver, constitutes an apparatus capable of transmitting intelligence by word of mouth, or carrying on conversation when two sets of such instruments are provided, sufficiently well to be of any practical utility?

Ans. In my opinion the results were not sufficiently good to justify the statement that the apparatus would be of practical utility. Frequently a word or two, or part of a sentence, occasionally the whole of a short sentence, and in very rare instances two or three short sentences together could be made out, though with some difficulty; but I think there can be no question that if the apparatus of which you speak was the only one available for the transmission of intelligence by word of

mouth, that it would be impossible to induce any one to make any practical use of it, either for business or social purposes. In making this answer I take into consideration the fact that the instruments were adjusted and operated by persons of skill and experience, and that the results attained, unsatisfactory as they were, were much better than could possibly be got from the apparatus in the hands of persons of ordinary skill, who are the very ones who have occasion to make practical use of the telephone as a means of conveying intelligence.

Q. 82. Even with the skill applied to the use of these instruments in New York, and under the conditions which surrounded their use there, did the listener on the whole acquire a sufficient knowledge of what was uttered into the transmitter to make the instruments of practical utility for the transmission of intelligence for any of the ordinary uses of life?

Ans. No; I think not. The verbatim report shows that it was only at very rare intervals that enough was understood to convey even an idea of what was being said; and the understanding of a sentence or two now and then was almost entirely a matter of accident. Even if the apparatus worked as well as it did during the tests, I cannot conceive that it would be of any practical utility for the purposes for which such an apparatus is employed.

Adjourned until April 4, 1883, at 10, A. M.

APRIL 4, 1883, 10, A. M.

Examination resumed.

Q. 83. From the character of the results produced by all the couples of which "F reproduced" was the transmitting member, I should infer that there was some radical vice of construction in that instrument, and from the fact that the results obtained when using with it a very sensitive modern receiver, though still practically worthless, were better than those obtained by using with it the rude instrument "B reproduced," I should infer that this vice of construction was of such a character that it could be made less destructive with the more sensitive receiver. Do you perceive anything in the nature of the construction and operation of "F reproduced" which leads to and accounts for these results; and if so, will you state what it is, and indicate how it produces its effects?

Ans. There is a radical vice in the construction and mode of opera-

tion of the transmitter "F reproduced," and I regard it as one which accounts for all the peculiarities which were exhibited in its performance during the tests. In order to present an intelligible statement of the nature of this defect, some explanation of the general principle of operation of transmitters, of which "F reproduced" is a type, will be necessary.

"F reproduced" is a transmitter the operation of which depends upon variations of pressure between two electrodes interposed in an electric circuit, one of which electrodes is mechanically attached to and partakes of the movement of a diaphragm or plate which is caused to vibrate by the action upon it of atmospheric sound waves produced by the voice of the speaker. These electrodes are held in contact under a given initial pressure which is regulated by an adjusting screw. When the diaphragm is thrown into vibration the movements are mechanically communicated to its attached electrode; and thus the pressure is increased or diminished with each vibration of the movable electrode towards or away from the stationary one, this increment or decrement varying according to the force or amplitude of the different vibrations. These variations in pressure between the electrodes produce corresponding variations in the resistance which they offer to an electric current generated by a constant electro-motive force, such as a battery, and which in traversing its circuit, is made to pass from one electrode to the other. By a well-known law these variations of resistance produce like variations in the strength of the current by which the receiving instrument is actuated. There is in this type of transmitters a certain range of adjustment in respect to the normal pressure of the electrodes against each other, within which range sensible effects may be produced upon the receiving instrument.

To illustrate: If the normal pressure is too great, not only are the vibrations of the transmitting diaphragm checked, but the variations in pressure which it is able to produce are so slight that the sounds caused in the receiver by the corresponding variations in the current are entirely inaudible. If, on the other hand, the normal pressure is too small, the diaphragm is left perfectly free, and in some of its more forcible vibrations the electrodes are completely separated and the current is broken. These breaks, especially when they occur in rapid succession in the receiver, produce a loud, snapping sound, which stuns the ear of the listener and utterly destroys the articulate character of the sounds. It will be evident that the most efficient degree of normal pressure in

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practice will be the least that can be applied without incurring a liability of the separation of the electrodes, inasmuch as the diaphragm will be nearly free, and the corresponding variations in the pressure will be the greatest consistent with proper articulation. Such an adjustment will give the loudest, possible articulation in the receiver. Hence, the general rule for the adjustment of such a transmitter may be stated to be to work it as close as practicable to the breaking point. From this explanation it will be understood that the greater the pressure upon the electrodes the more stable and permanent will be the adjustment and the weaker the sounds at the receiver. On the other hand, the less the pressure the greater the liability to the separation of the electrodes, the more unstable and delicate the adjustment, and the louder the sounds in the receiver. The best adjustment, all things considered, is that which strikes an intermediate point between these two antagonistic conditions.

The radical defect in the construction of "F reproduced" is two-fold: First, the range of normal pressure within which it will transmit articulate speech is excessively small; and, second, by its own operation it continually tends to change its own condition of adjustment. This will be clearly apparent upon consideration of its construction and action. The stationary electrode, as it may be termed, consists of a little pile of powdered carbon, the particles of which may be described as semi-conductors. Upon the top of this pile of carbon powder rests the vibratory electrode, which is attached to the diaphragm; and the normal pressure is increased or diminished by raising or lowering the stationary electrode with its carbon powder. Inasmuch as the stationary electrode possesses little or no elasticity or resiliency, the vibrations of the vibratory electrode tend, on the one hand, to press too forcibly against the carbon powder, and on the other hand, to separate from it altogether. For this reason the range of adjustment is, as I have said, exceedingly narrow; but this defect would not be fatal, if the permanency of the conditions could be depended upon after having once been established. But at this point we come upon the essential fault of the apparatus. The loose carbon powder has no elasticity, and no tendency to restore itself after having been displaced. Hence, after the special adjustment of the instrument which enables it to transmit articulate speech intelligibly, has been reached, every subsequent vibration of the diaphragm and its attached electrode, tends to beat down and compress the carbon powder and to push its surface farther away from the normal position of the movable

electrode. If, therefore, the transmitter be spoken to very loudly, the greater amplitude thereby given to the vibrations of the vibratory electrode, will, on the one hand, push away the carbon powder, and, on the other hand, will withdraw so far from it as to break the circuit and render the articulation unintelligible. From the above consideration it will be seen that a transmitter like "F reproduced" requires the most careful and delicate adjustment, and that such adjustment cannot be maintained for the reason that the very operation of the instrument itself inevitably tends to defeat and destroy it.

After the above explanation it will be easy to understand the reason why better results were attained with the sensitive receiving instruments of modern construction than with comparatively crude instruments, such, for example, as "B reproduced." Much fainter sounds can be heard and understood by means of the first-named instruments; and hence it is possible to work with the transmitter adjusted to a greater normal pressure. By reason of this increased pressure, not only is there less liability to breaks, but the amplitude of the vibrations of the electrode is diminished, and a much longer time, comparatively speaking, elapses before the carbon powder is pushed away far enough to necessitate a readjustment of the transmitter. In a word, the employment of the sensitive modern receivers renders it possible to work transmitter "F reproduced" under its most stable conditions of normal adjustment. It is hardly necessary after what I have already said, to explain why it is essential that a transmitter like "F reproduced" must not be jarred or shaken while in operation, as the least disturbance in the position of the carbon powder tends to destroy the essential conditions of operation in the apparatus with respect to the pressure of the movable electrode upon the mass of carbon powder.

Q. 84. You have spoken in your last answer of louder and fainter sounds produced at the receiver, and I understand you to have referred, except perhaps in one passage, to variations in the volume of sounds all of which were produced by variations of pressure without break of contact or interruption of current. I wish you would state how sounds, due to such mere variations of current as such an instrument can produce, compare to those due to interruptions of current by breaks of contact, both as respects loudness and as respects articulation.

Ans. In respect to loudness the sounds produced in the receiver by the interruption of the current are many times—perhaps a hundred times—louder than any which are produced by variations. They have

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what may be termed an explosive or violent character and may often be heard several feet from the instrument, or even in any part of the room. Articulate sounds are produced by variations in the current, are comparatively weak and can usually be well heard only by applying the instrument closely to the ear. The sounds caused by interruptions are utterly destructive of articulation, and, if of frequent occurrence, render it impossible to recognize spoken words.

Q. 85. In Mr. Benjamin's deposition, page 1327 of defendant's record, he makes statements, particularly about results obtained with "F reproduced" and a modern Bell magneto receiver; and among those statements I find the following: "At one time the adjustment was such that the sound emitted by the receiving instrument was so loud as to make it painful to hold the instrument to the ear. These sounds I continued to hear coming from the receiver even when I held the latter off at arm's length." What kind of an operation was going on in the transmitter at that time, and was it transmitting articulate speech then?

Ans. Under the circumstances mentioned the transmitter must have been adjusted with too little pressure upon the electrodes, by reason of which the voice of the speaker produced vibrations which interrupted the circuit. The sounds described by Mr. Benjamin could not have been produced in any other way by means of instrument "F reproduced," nor could the apparatus possibly have transmitted articulate speech at the time when it was producing the sounds described. I understand, from the context of Mr. Benjamin's deposition, that that was what he found to be the character of the result in such cases.

Q. 86. On the next page of Mr. Benjamin's deposition, and still speaking of the instrument "F reproduced," I find the statement among others, that "The capacity of the instrument seems to range between the production of sounds loud enough to be heard at three feet distance, perhaps, from the receiving instrument, to those barely audible in the latter." Does the capacity of the instrument *to transmit articulate speech* extend over that whole range, or only over a small part of it?

Ans. Only over a very small part of it. It does not appear from the tests that articulate sounds were in any case produced which were loud enough to be heard without the most careful attention, and under conditions in which all external sounds, however faint, were excluded.

Q. 87. Mr. Benjamin's deposition, continuing the passage quoted in my last question, and speaking of the range there referred to, and which I understand you to say exceeds the range in which articulation is pos-

sible, says: "And the change from one extreme to another is effected by the movement of an adjusting screw over an infinitesimal fraction of an inch." I should like to have you state, if you can find language to do it in, how much change of adjustment or movement in the relative position of the two electrodes can be permitted when they are in an articulating condition, without carrying them outside of it?

Ans. I think I should be entirely within bounds if I should say that the movement of the electrode necessary to carry it beyond the admissible limits of its movement is less than the thousandth part of an inch; the movement is so small that it is almost impossible to perceive it except by its results.

Q. 88. In the same paragraph, Mr. Benjamin's deposition says: "I think these tests demonstrated very conclusively the remarkable delicacy required in the adjustment of 'F,'" by which I suppose he refers to the tests of "F reproduced"; Do you think the phrase "remarkable delicacy" overstates the matter?

Ans. I do not; I think that it conveys a correct idea of the fact.

Q. 89. In the same paragraph, having stated that the movement of an adjusting screw over an infinitesimal fraction of an inch will carry the instrument from an extreme, which, you say, is outside of the limits of articulation, on the one hand, to another extreme, which, you say, is below the limits of articulation on the other, Mr. Benjamin's deposition says that the instrument has "apparently a wide range" of effective adjustment; do you consider that such an instrument can be said in any sense to have a wide range of effective adjustment—or to have an excessively narrow one?

Ans. Its range of adjustment for the effective transmission of articulate speech is as narrow as it can possibly be, although it may be said that there is quite a range of adjustment within which noises of some sort may be produced.

Q. 90. In your 59th, 60th, and 61st answers you have spoken of the special provisions made to protect "F reproduced" from any jar; on which day was the heavy block of stone first used?

Ans. On the third day.

Q. 91. In your 64th answer you have spoken of the great assistance which the transmitting operator received in adjusting the battery transmitter from indications or directions sent back over the tell-tale line by the listener; was that assistance much or little resorted to, and was it

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of much or little aid in obtaining such results as were obtained when "F reproduced" was used as a transmitter?

Ans. It was employed almost continually after the erection of the tell-tale line on the first day; and was of material advantage in two ways:

First, in enabling the adjustment or readjustment of the transmitter to be effected in a very much shorter space of time than would have been possible without its aid; and, *second*, in conveying information to the speaker whereby he was enabled to, as it were, adjust his voice to the condition of the transmitter at the moment, thus enabling him, so to speak, to follow the instrument to a certain extent while its adjustment was failing.

Q. 92. In his deposition on page 1327 Mr. Benjamin says: "The whole test of this instrument "F" with a Bell instrument was in fact, a constant trial for adjustment." He refers, I suppose, to the instrument "F reproduced." Is that statement a correct one?

Ans. Yes; I think it concisely expresses the results obtained. The transmitter had to be readjusted as often as once in five or ten minutes, and the adjustment always commenced to fail immediately after it had been reached, and the intervening times were largely occupied in trying to ascertain the direction in which the adjustment ought to be made.

Q. 93. How successful would these trials have been in obtaining any operative adjustment, or obtaining it within a reasonable time, if one of the operators had been an entirely unskilled person—a country farmer, for example—and the receiver had been "B" or "A" and there had been no tell-tale line between the stations?

[*Objected to by Mr. Hill as incompetent.*]

Ans. Judging from the results obtained in those tests it does not seem to me that such an adjustment could be obtained, except after long and tedious trial, and that when obtained, that it would be more a matter of accident than of certainty.

Q. 94. Suppose the tell-tale line in the New York tests had been equipped only with "F reproduced" and "B reproduced", or "F reproduced" and "A", of what value would it have been for any of the purposes for which it was used?

Ans. Not the slightest. In fact the two lines would have made twice the trouble that one line did.

Recess until 3, P. M.

Q. 95. As I read the notes of the tests in New York, it appears to me that, from time, to time the operations were entirely suspended for the purpose of adjusting the instruments, and that what was said and done through the instruments during those stoppages for adjustment and for the purpose of getting them in order, was generally not taken down; what was the fact about that?

Ans. The words spoken while the instruments were being adjusted were principally numerals counted in regular order, and such phrases as "Hello", "Do you hear me", etc. These were usually not taken down by the reporters, although in several instances this was done. When the adjustments were not taken down, it was usually noted in the report by the phrase "instrument adjusted"; or words to that effect.

Q. 96. In your 84th answer you spoke of the difference between the operation of the transmitter when producing loud sounds and the inarticulate character of those sounds. I call your attention to the testimony of George H. Bowman, whose deposition on behalf of defendants, is printed on page 487 of the record, particularly to his answers 10 to 18 inclusive. He therein states in substance that he heard sounds from a talking-machine when his ear was eighteen inches or two feet, or something like that from it. Could a magneto transmitter, like "C" or "I" or "E" produce a sound loud enough to be heard at that distance from a receiver like "B" or "A" or "I," or "C" or "E"?

(*Objected to as not correctly stating Mr. Bowman's testimony, which in answer to the question "How close was your ear to the machine when you heard the sounds coming through it;" was "I could not just tell; may be eighteen inches or two foot, or something like that; I was very close to him, standing right aside of him.*")

(*Complainants' counsel replies that the witness further said that by "him" he meant Drawbaugh, and that the machine was at Drawbaugh's ear, the witness being at such distance as he stated.*)

(*Question further objected to by Mr. Hill as incompetent and leading.*)

Ans. It could not possibly happen.

Q. 97. Suppose one listener had at his ear either of the receivers mentioned in the preceding question, the transmitter "F reproduced" being connected with it, and another listener standing beside him with his ear about eighteen inches away from the receiver, could not recognize any words coming from the receiver, but heard proceeding from it a sound much as if one was talking into an empty barrel; what kind of

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an operation must the transmitter have been performing at that time, to produce that result and how much articulation could the first listener have been hearing?

(*Objected to as incompetent.*)

Ans. The transmitter must have been executing a succession of breaks or the sounds could not have been heard at the distance mentioned from the receiver, and, as an inevitable consequence, no articulation could have been heard by the person whose ear was at the instrument.

Q. 98. How much difference is there in the ease with which a listener at an imperfect and inoperative apparatus can recognize familiar phrases such as "Do you hear me now;" etc., as compared with the ability of the same apparatus to effectually transmit a newspaper sentence, or a business or social inquiry or remark not specially familiar and expected, and what is the reason for the difference?

Ans. It is very much more easy to recognize familiar phrases, inasmuch as they may be understood by their pitch and the rhythm of their successive syllables, even when the quality of sound is not distinguishable. The effects of imagination and of memory no doubt aid materially in the process, and we imagine we hear the words in the sounds much in the same manner that we sometimes think that we recognize words and phrases in the notes of animals, birds, and insects. If the words are unfamiliar we are obliged to depend upon the transmission of the quality of the sound, or, in other words, upon the completeness of the articulation; and hence have difficulty in recognizing the sound of the word, unless all the characteristics of its distinctive sound are transmitted with fidelity.

Q. 99. The instruments "D" and "E" were not tried together during the New York tests, and Mr. Benjamin testified that this was because one of the wires of "D" had become accidentally broken a short time before. So far as you could judge from the tests made with "E," was it an instrument capable of being used either as a magneto receiver or magneto transmitter to any useful extent; and if so, will you state how efficient it is as compared with modern instruments, and point out any special thing you may have observed in its construction which impairs its efficiency?

Ans. I think that instruments like "E" might be successfully employed for practical use, especially if there were no better ones to be

had. The articulation of "E" seemed to be very good, but the sound was wanting in volume and loudness. I attribute this, in great measure, to the smallness of the permanent magnet, and to the peculiar manner in which it is disposed with reference to the coil of the electro-magnet which it is designed to polarize. The permanent magnet is in the form of a flat involute, making about one and a quarter turns around its center or point of origin. One magnetic pole is at this point, and the soft iron core is here placed in contact with it. The opposite pole of the permanent magnet, however, is brought into the same neighborhood, and, in fact, partially encircles it. The effect of this arrangement is that the two poles of the permanent magnet tend to induce opposite magnetic polarities in the core; and hence the magnetism actually imparted to the core is merely that due to the difference between the opposing inductive forces, and is very weak in proportion to the size of the instrument. The electro-magnet has a hollow core with a plug in it, which is considerably inferior in efficiency to a solid core of equal diameter; and the diameter of the helix is so great that its outer convolutions can produce but an insignificant effect upon the core when traversed by the weak currents employed in telephony. I think the defects which I have mentioned are quite sufficient to account for the difference in volume of sound between this instrument and the best modern magneto instruments.

Q. 100. It is evident that the instrument "H" and the various receivers used with it on the first day did not succeed in transmitting sentences with such success as to be of any practical value, but it is also evident from the results obtained on the second day, that "H" and any fairly good receiver, as the instruments were then arranged, and with the special precautions taken on the second day, in addition to those taken on the first day, and in the hands of skilled operators, is capable of transmitting articulate speech with such success as to be of some practical utility. I now wish to know whether "H," which appears to be the most elaborate instrument produced in evidence, and which is alleged to have been made at some time after the date of the first Bell patent, is an instrument capable of being used by the community generally on private lines and telephone exchanges as telephones are ordinarily used, with such success as to be of any practical utility for these purposes?

[*Objected to as incompetent and leading.*]

Ans. In my opinion it is not. It is true that in the hands of skilled

persons, capable of readjusting it when necessary, and of speaking into the transmitter with the precise degree of loudness of utterance adapted to the special adjustment of the instrument, and taking pains also at all times to speak at the proper distance from the mouthpiece, very good results may be obtained; and, in fact, such results were obtained on the second day, when Mr. Hill was speaking to the transmitter; but when Mr. Drawbaugh, who may be assumed to be a person having a considerable degree of skill and experience, attempted to transmit a newspaper paragraph under precisely the same conditions, the results were quite unsatisfactory. As telephones are ordinarily used they must necessarily be generally placed in the hands of persons who have not the slightest knowledge of the principles of their construction, or of the proper manner of adjusting them, and who will speak into them at all sorts of distances and at every degree of loudness within the compass of the human voice, and who, so far as my experience goes, are very apt to lose their patience after a few unsuccessful attempts to make themselves understood. Under such conditions I do not think an apparatus like "H" would serve for ordinary practical use.

Q. 101. Will you please answer the same question as to instrument "O"?

[*Same objection.*]

Ans. The same remarks apply to instrument "O"; there was no special difference in the performance of "H" and "O".

Q. 102. From the stenographer's notes quoted on page 1325 of Mr. Benjamin's deposition, it appears that some special pains were taken to report "exactly" what you said on one occasion during the tests. It is evident, from the ingeniously bad grammar of the reporter, that he did not report "exactly" what you said. Did you form or express the opinion that "E" or "A" were as good as the receivers in ordinary use, and to which you have become accustomed, such as the "pony-crown," or "butter-stamp" forms?

Ans. The remarks attributed to me, I think, are correctly reported with the exception of the first one. I have no recollection of using the expression "And it compares as favorably with any telephone as I ever heard." I do not believe that I made use of this expression, although it is not unlikely that I used a phrase similar to that quoted, as to the articulation of the receiver. The context seems to indicate that such was the case, inasmuch as the expression quoted is immediately followed

by the following: "words that were indistinct was the fault of the transmitter and not of the receiver. I did not at any time form an opinion that Drawbaugh's apparatus as a whole, compared favorably with any telephone I ever heard. It is quite possible that I may have said that the articulation of "E" was as good as that of other telephones, but I did not think it equal to others in volume of sound, and certainly did not intend to say so.

Q. 103. In your 70th answer (p. 1320) you refer to the joint memorandum which was put in evidence in connection with that answer; is that a substantially true representation of the tests of the first day so far as your knowledge and means of knowledge extended?

Ans. I believe it is truthful and accurate so far as it goes; it is not very complete as to what was said in the transmitting room, but I do not think anything was omitted in the report which was heard and understood in the receiving room. No stenographer was present on the 1st day until the latter part of the afternoon, but careful longhand notes were taken by Professors Cross and Wright and myself, and we took pains to get down everything that was transmitted, fully and fairly.

(Adjourned until April 5, 1883, at 10 A. M.)

APRIL 5, 1883, 10, A. M.

Examination resumed.

Q. 104. I call your attention to Mr. Drawbaugh's electric clock, especially to the descriptions of it given on page 906 of his deposition and subsequently; and without reference to the details or precise form of his construction, I wish you would state whether self-propelling electric clocks run by electric force obtained from earth batteries, consisting of plates of copper and zinc buried in the ground and packed in coke, using the electricity by alternately opening and closing the circuit by the motion of the pendulum, and deriving their mechanical force from the alternate attraction and repulsion of permanent magnets and electro-magnets or coils for each other when affected by change in the current, were well-known in the art before 1860.

(*Objected to as immaterial, irrelevant and not rebutting, said clocks having nothing to do with this case except so far as they may possibly aid in fixing dates, and in throwing light upon the accuracy and circumstantiality of the recollection of the witnesses.*)

Ans. They were very well-known.

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persons, capable of readjusting it when necessary, and of speaking into the transmitter with the precise degree of loudness of utterance adapted to the special adjustment of the instrument, and taking pains also at all times to speak at the proper distance from the mouthpiece, very good results may be obtained; and, in fact, such results were obtained on the second day, when Mr. Hill was speaking to the transmitter; but when Mr. Drawbaugh, who may be assumed to be a person having a considerable degree of skill and experience, attempted to transmit a newspaper paragraph under precisely the same conditions, the results were quite unsatisfactory. As telephones are ordinarily used they must necessarily be generally placed in the hands of persons who have not the slightest knowledge of the principles of their construction, or of the proper manner of adjusting them, and who will speak into them at all sorts of distances and at every degree of loudness within the compass of the human voice, and who, so far as my experience goes, are very apt to lose their patience after a few unsuccessful attempts to make themselves understood. Under such conditions I do not think an apparatus like "H" would serve for ordinary practical use.

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APRIL 5, 1883, 10, A. M.

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(*Objected to as immaterial, irrelevant and not rebutting, said clocks having nothing to do with this case except so far as they may possibly aid in fixing dates, and in throwing light upon the accuracy and circumstantiality of the recollection of the witnesses.*)

Ans. They were very well-known.

Q. 105. I call your attention to the magneto keys described in Mr. Drawbaugh's deposition, pages 980-985 and elsewhere, and ask you whether magneto keys for telegraphing without a battery and depending for their action upon induced currents derived by moving permanent magnets or electro-magnets or armatures in proximity to each other, were well-known in the art before 1870; and if yea, please name some of the patents which show various forms in which this invention was used.

(*Same objection, mutatis mutandis.*)

Ans. Such magneto keys were well-known long before the date mentioned. The English patent of Henley & Foster, No. 12,236, of August 10, 1848, describes a magneto key designed for operating the needle or galvanometer telegraph; descriptions of this have been published in Shaffner's Telegraph Manual, 1859, and other popular works of wide circulation. English patent, No. 512, of 1859, of C. W. Siemens, describes a magneto key adapted to the Morse system; and this key has also been described in various works on telegraphy, among which I may mention *Sabine's Electric Telegraph* first published about 1857 in England, and within two or three years thereafter republished in this country in a cheap form. I think there have been other magneto keys invented and described in publications, which I do not at present recall.

Q. 106. It appears from Mr. Drawbaugh's deposition, page 984, that in one of the earlier forms in which he made his magneto key the electro-magnet was stationary, and the currents induced by moving the permanent magnet—an arrangement which was obviously very objectionable because it required motion to be given to the heaviest part of the apparatus—and that he afterwards adopted the form described on page 981, in which neither the permanent magnet nor the electro-magnet moved, but the magnetic variation in the core of the latter, which generated the currents, were produced by establishing a magnetic connection by a movable piece of inductive metal, from time to time, between the core of the electro-magnet and the poles of the permanent magnet normally at some distance from each other. State whether this kind of improvement in magneto-signaling apparatus was known in the art before 1870, without reference to the precise form or details of construction by which it was used.

[*Same objection.*]

Ans. It was; this arrangement is found in one form of Henley's key.

The same organization of parts if very common in the magneto-electric medical instruments, which have been in common use in this country for many years, and long before 1870. I think this form is to be found in Henley's patent, No. 734, of March 23, 1861.

Q. 107. I call your attention to the descriptions of a magneto dial telegraph given on page 986 of Mr. Drawbaugh's deposition, in which the currents were generated by turning by means of a crank a dial provided with letters of the alphabet carrying on the same shaft a drum on the circumference of which were placed thirteen armatures, which, when turned, passed the poles of an electro magnet generating, by the double action of the armature, one current as each letter of the alphabet came opposite the inducing electro-magnet, and thereby working a receiving dial or its pointer by an electro-magnetic "step-by-step" movement. Were magneto-electric dial telegraphs of this same general character (without regard to the precise details of construction) well-known in the art prior to 1870; and if so, will you state when and where you first saw one?

(*Same objection, mutatis mutandis.*)

Ans. A magneto-electric dial telegraph, embodying the organization described is set forth in the English patents of Henley, particularly Nos. 734 and 2464 of 1861. An apparatus of this kind made under Henley's patents, consisting of two such instruments, was imported by the American Telegraph Company in the year 1863 when I was assistant engineer of that company. The intention was to employ them in the smaller class of local telegraph offices in New York City, and thus dispense with the necessity of paying skilled operators to attend the offices. Nothing was ever done with them by the company so far as I know, except by way of experiment.

Q. 108. Mr. Drawbaugh, on pages 963 and 1067, describes an automatic fire-alarm. It consisted of a compound bar, formed of two different materials unequally expanded by heat; when heated the unequal expansion of the two caused the compound bar to bend, and by this motion affect an electric circuit and produce a signal by ringing an electric bell. Mr. Drawbaugh says that he constructed this in 1872 or 1873; was an automatic fire-alarm on this principle (irrespective of precise form or details of construction) known in the art before the years 1872 or 1873?

[*Same objection.*]

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Ans. Such an apparatus was invented by the English electrician, Wheatstone, and was patented by him, as No. 2456, October 10, 1860. Alexander Ross took out a United States patent, No. 37,875, March 10, 1863, for an improved form of the same device, and between 1869 and 1872 William B. Watkins, of Jersey City, invented a number of improvements upon the same apparatus, some of which he patented. The dates and numbers of these patents are as follows:

January 31, 1871, Nos. 111,408–9–10–11–12–13.

March 28, 1871, No. 113,120.

I was acquainted with Watkins at the time he was engaged in getting up these improvements. He was a man of considerable enterprise, and advertised his inventions extensively, both by exhibitions and newspaper articles. He formed a company, and ultimately got the apparatus into quite extensive use in the larger cities of the United States.

Q. 109. On page 989, Mr. Drawbaugh describes an autographic telegraph, which he partially constructed, and which depended for its operation upon the synchronous vibrations of two pendulums at the sending and receiving stations respectively. That also was a kind of apparatus well known as far back as 1867, was it not?

[*Same objection.*]

Ans. Yes; it is a very old invention. In its earliest form it was known as Bakewell's Copying Telegraph, which is described in many works on the subject of telegraphy. Prior to 1867 improved forms of it by Casselli, of Italy, and Lenoir, of France, had been put into actual commercial use, although to no great extent. Apparatus of this kind was shown at the Paris Exhibition, which, I think, took place in 1867, and was the subject of much comment in the scientific and other journals of the day.

Q. 110. These instruments depended also upon writing with conducting ink upon a nonconducting material, or with nonconducting ink upon a conducting material, did they not?

[*Same objection.*]

Ans. They did in every case.

Q. 111. Was there known before 1867 any acoustic apparatus intended to be operated by the human voice, and in which the preservation of the form of the sound-waves of the human voice was important, and in which the sound chamber spoken into was made of plaster of

Paris, for the purpose of preventing false vibrations; and if so, what was it?

[*Same objection.*]

Ans. Yes; these characteristics are found in the so-called phonautograph of Leon Scott, to which I have referred in a former answer, and of which a descriptive account was published prior to 1867. I think in an early edition of Ganot's Physics. This is the apparatus referred to in the extract referred to from the Scientific American of December 12, 1863, put in evidence by defendants, page 1105. Mr. Drawbaugh, on page 1092, gives a description of what he says is one form of this instrument.

(*Cross-examined by Mr. Hill, de bene esse.*)

Cross-Q. 112. I understand you that you and Mr. Edison jointly invented a type-printing telegraph instrument, some time after 1867; am I correct?

Ans. You are.

Cross-Q. 113. Type-printing telegraph instruments had been well known a great many years before that time, had they not?

Ans. Yes; for at least twenty years, in one form or another.

Cross-Q. 114. Do you consider that you and Mr. Edison were any the less original inventors because you were working in a field that had already been, to some extent, occupied by others?

Ans. Our invention was a narrow one, and consisted in the selection of known devices from existing apparatus to form a new apparatus, adapted to a special purpose, for which the prior ones could not have been commercially used.

(*Answer objected to by Mr. Hill as not responsive, and question repeated.*

Question objected to as ambiguous in that it does not indicate whether the inquiry is as to their being the original inventors of the type-printing machine, or original inventors of the particular improvements and modifications then introduced into an existing kind of instrument, and by which it became "specially adapted for the purpose."

Respondents' counsel replies that he thinks the witness is sufficiently intelligent to understand and answer the question without any help.

Complainants' counsel replies that the witness has already shown that he understands the question and answered it properly, but that the difficulty is that a perfectly correct answer may, by reason of the ambiguity of the question, be hereafter claimed to mean either one of two inconsistent things.

Respondents' counsel says that that will depend altogether upon the clearness with which the witness gives his answer.

Complainants' counsel replies that the question literally calls for an answer "yes" or "no," and that construed in one sense, "yes" would be a correct answer, and construed in another sense, "no" would be a correct answer.

Respondents' counsel adds that he believes the witness to be sufficiently intelligent to construe the question in its plain and obvious sense, even notwithstanding the suggestions contained in the objections. He therefore repeats the question and calls for a direct answer to it.

Complainants' counsel replies that the witness has already fully and properly answered the question in the answer which was objected to.

Respondents' counsel objects to the interruption of the cross-examination, and requests the question to be put to the witness.)

(Question repeated.)

Ans. I stated in my direct examination that the invention was a type-printing instrument specially adapted for a certain purpose. If the adaptation was original I do not consider that it was any the less so because other type-printing instruments had been made for other purposes, but which would not successfully accomplish the specific result we had in view.

Cross-Q. 115. In the inventions made and patented nowadays in all the arts, are not the overwhelming majority of them improvements upon inventions previously made by others?

Ans. Yes; I think it may safely be said that improvers are more numerous than originators.

Cross-Q. 116. And is it not also true that many valuable inventions are re-invented by others without knowledge of the previous invention of the same things, and that such re-inventors exhibit the same inventive ingenuity as if they had really been first to make the inventions?

Ans. Such an occurrence is not uncommon, and, in case of an independent re-invention of the same thing, it sometimes, though not necessarily always, requires as much inventive skill on the part of the latter inventor as on the part of the earlier one.

Cross-Q. 117. As bearing on this subject I will ask you, as an experienced solicitor of patents, what is about the numerical proportion annually between the applications which are rejected and those which are patented by the United States Patent Office?

Ans. I do not recollect the proportion, although I think I have seen it stated from time to time in the annual reports of the Commissioner.

Cross-Q. 118. It bears the proportion of at least ten thousand rejected to twenty thousand granted, does it not?

Ans. I cannot undertake to say; the reports, however, are easily accessible.

Recess until 3 P. M.

Cross-Q. 119. Has Mr. Siemens' magneto key, which you testified about in your examination-in-chief, come into practical use in the art?

Ans. Not largely; I have seen it stated that they were used on some of the Russian lines.

Cross-Q. 120. Give, as near as you can, the date of your visit to Boston in 1877, when you first saw and heard a speaking telephone?

Ans. I have no means of fixing the date accurately now, but I recollect that I tried to fix the date on a former occasion, and came to the conclusion that it must have been in June, 1877.

Cross-Q. 121. Give, as nearly as possible, the date when Mr. William Orton directed you to make a thorough investigation of the subject of speaking telephones, and to ascertain under what patents, if any, the right to use the apparatus would have to be obtained?

Ans. I cannot give this date very accurately. It was after the lapse of some little time after I told him what I had seen in Boston. I should say that it could hardly have been less than two weeks, or more than five or six, according to my present recollection.

Cross-Q. 122. When did you make your formal report to Mr. Orton of the results of that investigation?

Ans. I am not sure that I made a formal report—that is, a final one. I made a report in the early part of September in writing, of a preliminary character, embodying the results I had reached up to that time, and the intention was to make a complete and final one after the whole state of the art had been gone over; but the officers of the company took action without waiting for this, and I think that in consequence of that the final report was not made, although I cannot say positively. The information might have been, and probably was, communicated in a somewhat informal manner.

Cross-Q. 123. Did you make a report to the company in October or November, 1877, on the subject of your said investigations?

Ans. I think not; I presume I talked the matter over with them more or less.

Cross-Q. 124. What action did the company take in the matter, and

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when, and was it or not in accordance with recommendations made by you?

Ans. I think the only recommendation made by me was to acquire rights under certain patents; and this was acted upon in accordance therewith sometime between October and December; I cannot give the date any closer from my present recollection.

Cross-Q. 125. Do you mean in November, or in one of the three months, October, November, and December?

Ans. It was in one of those three months, and most probably in November.

Cross-Q. 126. What patents did the company acquire in whole or in part at that time, in accordance with your recommendation?

Ans. I think the Western Union Company as a company did not take hold of the matter. A new company was formed to carry on the telephone business, which company I understood to be controlled directly or indirectly by the Western Union. The company was known as the American Speaking Telephone Company and acquired licenses under several patents of Elisha Gray and afterwards of other parties.

Cross-Q. 127. About what time was that new company organized or put into operation?

Ans. In the early part of December, 1877, probably not later than the 7th of December.

Cross-Q. 128. Did it ever have any license under the Bell patents of March 7, 1876, and January 30, 1877, or either of them; and if so, when?

Ans. I cannot say; I have no knowledge of any such license.

Cross-Q. 129. As the result of your investigations, did you advise Mr. Orton, in the fall of 1877, in substance, that you found Mr. Gray to be the first inventor, or first patentee, of the main principles involved in the electric speaking telephone?

Ans. Not exactly that; I advised him in substance that I thought Prof. Gray to be the first inventor of certain apparatus, which appeared to be a necessary part of the speaking telephone, and also that there was much probability that some portion of its principle of operation, irrespective of its mechanism, would also be found to be Gray's.

Cross-Q. 130. What certain apparatus did you refer to?

Ans. An electro-magnet, acting upon a metallic plate or diaphragm, which is capable of responding to sound vibrations.

(Adjourned until April 6, 1883, at 10 A. M.)

APRIL 6, 1883, 10, A. M.

Examination resumed.

Cross-Q. 131. Was that apparatus which you partially described in your last answer, a speaking telephone transmitter, or receiver?

Ans. It was capable of use as a speaking-telephone receiver, and very likely as a transmitter also. It had actually been used by Gray as a receiver for composite musical tones, in connection with his harmonic transmitting apparatus, but not as a speaking-telephone receiver.

Cross-Q. 132. When did you first have knowledge, derived from Mr. Gray, of this special apparatus which you say was capable of use as a speaking-telephone receiver, and very likely as a transmitter also?

Ans. I do not think that I knew of this particular instrument before September, 1877, and my impression is that I first knew of it in September or October of that year.

Cross-Q. 133. When did you first have knowledge from Mr. Gray of any apparatus invented by him,and capable of use for electric speaking telephone purposes, either as a transmitter or if not as a transmitter, as a receiver?

Ans. In September or October, 1877; it being the instrument spoken of in my last answer, which was capable of being used as a receiver.

Cross-Q. 134. When did you first have knowledge of Mr. Gray's caveat, filed February 14, 1876?

Ans. I cannot say certainly, but I am quite sure that it was in December, 1877.

Cross-Q. 135. Was it before or after the last report that you made to Mr. Orton and his companies, and in consequence of which reports, the licenses were procured from the owners of the Gray inventions, as you have testified?

Ans. It must have been afterwards; I am quite positive that the American Speaking Telephone Company had been organized, or that at least its organization had been determined upon before I had any knowledge of the caveat.

Cross-Q. 136. Mr. Elisha Gray, in his deposition in the Dowd case, testified to the effect that said American Speaking Telephone Company's manufacture of telephones was conducted under license from the owners of his patents, so far as the same were applicable to speaking-telephones; that the Harmonic Telegraph Company was the owner of his patents; that said license was given on the date of the organization of the Ameri-

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can Speaking Telephone Company, about the 6th of December, 1877; that in the license contract there were three parties to the agreement, the third party being the Gold and Stock Telegraph Company, who were made the agents of the American Speaking Telephone Company to manufacture speaking telephones and place them upon the market; are those statements in accordance with your recollection and belief?

Ans. They are, although I did not have personal knowledge in respect to many of these matters.

Cross-Q. 137. Referring to the investigation which Mr. Orton had directed you to make, and the results of which you reported to your employers in the fall of 1877, were those reports in writing; and if so, how many written reports did you make, and when?

Ans. I am not positive that more than one of them was in writing, and that one was a partial report handed in, I think, about the fifth of September. I intended to make another and final written report, but cannot recollect distinctly that I did. If I did it was very brief, and has escaped my memory, in consequence of the many other investigations and reports upon various subjects which I made about that time.

Cross-Q. 138. Assuming that the American Speaking Telephone Company was organized about December 6, 1877, as Mr. Gray states, did you have knowledge of Mr. Gray's caveat before, or not till after that date?

Ans. I am very sure that it was after that date; it may, possibly, have been a very few days before.

Cross-Q. 139. You delivered a lecture, or read a paper, before the American Electrical Society, at Chicago, Illinois, on December 12, 1877, on the subject of the speaking telephone, did you not?

Ans. I prepared such a paper, but did not read it personally. Some occurrence—I don't recollect what—detained me in New York at the time I intended to start for Chicago.

Cross-Q. 140. You sent the paper, to be read there, did you not?

Ans. I did.

Cross-Q. 141. How long did you prepare that paper before December 12, 1877?

Ans. Immediately before it was sent; I remember that I did not have time to completely finish the paper, and that it was returned to me, at my request, for corrections and additions before being printed in the society's journal.

Cross-Q. 142. Did that paper embody, substantially, the results of

your investigation of the subject of speaking telephones, which had been going on for some months previous thereto?

Ans. Some of the results of that investigation were embodied in the paper, although there were others, which it was not proper to make public at that time; I have not read the paper within several years, and do not recollect, at the moment, its details.

Cross-Q. 143. In your 129th answer you say you advised Mr. Orton, in substance, that there was much probability that some portion of the principle of operation of the speaking-telephone, irrespective of its mechanism, would also be found to be Gray's. What portion of the principle of operation of the speaking-telephone did you there refer to?

Ans. I referred to the production of composite tones upon a common receiver capable of responding to all kinds of vibrations by the action thereupon of an electro-magnet, traversed by an electric current of varying strength, and adapted to produce the required result.

Cross-Q. 144. At the time when you so advised Mr. Orton, had you examined, and did you understand, the Bell patents of March 7, 1876, and January 30, 1877?

Ans. I had examined them, and think that I understood them.

Cross-Q. 145. When did you first become personally acquainted with Mr. Elisha Gray?

Ans. I first met him about 1870 or 1871. I, however, did not become much acquainted with him until 1875.

Cross-Q. 146. What did you have to do with him in 1875?

Ans. Nothing in a business way, but I was much interested in his harmonic telegraph apparatus, and, as he was fond of talking about it to some one who understood his explanations, we naturally became somewhat intimate.

Cross-Q. 147. During what time in 1875 did those communications between you and Mr. Gray take place?

Ans. It was during the time in which he was in New York exhibiting his apparatus to the Western Union officers. I cannot remember the precise time.

Cross-Q. 148. Give your best recollection as to the time.

Ans. I should say it was about September; I can easily ascertain if it is important.

Cross-Q. 149. At that time did Mr. Gray say anything about the feasibility of talking between distant places by means of electricity?

(*Objected to as an inquiry for immaterial hearsay.*)

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Ans. I do not think he did.

Cross-Q. 150. Do you remember whether the subject was mentioned or not?

[*Same objection.*]

Ans. I am sure that it was not; it would pretty certainly have made an impression on me if Prof. Gray had spoken of the subject.

Cross-Q. 151. Describe what Prof. Gray exhibited to you and what he explained to you at that time, so far as it has any relation whatever to, or any bearing upon, any apparatus or principle or mode of operation since employed in speaking-telephones or referred to in either of Mr. Bell's patents which are involved in this suit.

Ans. At the time he was exhibiting his apparatus in New York, among other instruments he had one consisting of an electro-magnet mounted upon a square resonant box of thin wood, which he used as a receiver, sometimes in connection with a transmitter which might be called a musical organ, in which, however, the several tuned reeds were actuated by electro-magnetism instead of wind. This apparatus would transmit and reproduce music with all the variations of pitch and loudness. The vibrations of each reed of the transmitter were separately thrown upon the common conducting wire. Prof. Gray explained to me the manner in which the variations of current in the conductor, caused by the simultaneous presence of these different sets of electrical vibrations, acted upon the magnet, the vibrations of which were communicated to the resonant box capable of responding to all of them.

Sometimes he made use of an ordinary electro-magnet with upright poles as a receiver, over which was held a piece of tinned iron which resembled the cover of a blacking box, and probably was such a cover. The tinned iron was held just out of contact with the magnet, and the effects were like those of the resonant box, although weaker. Another experiment with the same resonant-box receiver consisted in connecting it with a transmitter having four reeds, each tuned to a different pitch; and the electrical vibrations produced by the respective reeds could be thrown upon the line wire by means of Morse keys. By manipulating the respective keys four distinct sets of Morse telegraphic signals were thrown simultaneously upon the line and were read by four operators from one and the same receiving instrument at the same time. These experiments, with Professor Gray's explanations, made it perfectly clear to me how composite tones could be transmitted over a telegraph line and made to act upon a common receiver. This appeared to me to be

the essence of Professor Gray's discovery, which he had carried out in various forms and for different purposes.

Cross-Q. 152. Please compare Mr. Gray's discovery and his embodiment of it, as then exhibited or explained to you, with the apparatus shown in Fig. 6 of Bell's patent of March 7, 1876, and point out the resemblances and differences whether in the apparatus or mode of operation.

Ans. The transmitting apparatus of Gray consisted, in part, of two or more reeds, each tuned to a determinate but different pitch or rate of vibration; so does the apparatus of Bell shown in Fig. 6. These reeds are thrown into vibration in both cases, by the application of external force. Gray employed independent electro-magnets for this purpose. Bell says they may be put "in vibration in a variety of ways, one of which is by wind." The vibrations of each reed produce a corresponding series of electrical pulsations in the line-wire, which are always of the same pitch or rate of vibration, and always of the same amplitude for each reed. In Gray's apparatus the electrical pulsations are produced by alternately breaking and closing a shunt circuit bridging a section of the transmitting battery; in Fig. 6 this result is produced by the inductive action of the reed upon the constantly magnetized core of an electro-magnet, whose coils are included in the line-wire. Thus in both cases the different reeds, whether actuated consecutively or simultaneously, throw their respective sets of electric pulsations upon the common line-wire.

In the apparatus of Gray, to which I have referred, all these different sets of electrical pulsations acted upon a common receiver, whereas in Fig. 6 there is a special receiver corresponding to each transmitting reed, and consisting of a reed tuned to the same pitch as its corresponding transmitting reed and actuated by an electro-magnet in the common line-wire; so that each receiving reed will respond only to pulsations proceeding from its own transmitting reed. But Prof. Gray, at the same time, showed me a set of analysing receivers, which I have not before mentioned, in principle and mode of operation exactly like those in Fig 6, and not differing materially in their construction, and which were sometimes used in connection with the transmitting apparatus described in place of the common or resonant box receiver.

Cross-Q. 153. Please compare Gray's common receiver, which he then exhibited and explained to you, with the receiver shown in Fig. 7 of Bell's patent of March 7, 1876, and point out the similarities and differences, so far as they exist.

Ans. The electro-magnets of the two instruments are substantially the same; the armature of Gray's instrument was fastened to a piece of thin wooden board, forming the upper side of a hollow wooden box; that of Bell, shown in Fig. 7, is fastened to a membrane stretched across the open mouth of a cone. I do not, at this distance of time, remember the details of the manner in which the armature was secured to the thin piece of wood forming the top of the box.

Cross-Q. 154. In Gray's common receiver, which you have just described, was the armature in contact with the pole of the electro-magnet; and if not, what was the distance between them?

Ans. It was not in contact, but the distance between them was very small indeed.

Cross-Q. 155. Were they arranged so that the vibration of the armature, under the influence of the electric pulsations, would bring it in contact with the poles?

Ans. I think they were not.

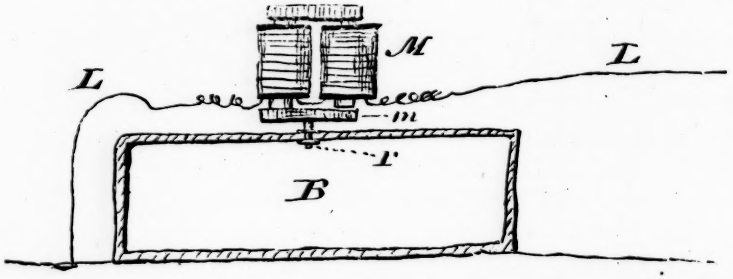
Cross-Q. 156. Will you do me the favor to make a sectional sketch which will exhibit to the eye the construction and arrangement of Gray's common receiver, so far as the general construction and working principle of the apparatus is concerned, and put it in evidence, together with a description and reference letters, as part of your answer?

Ans. I fear that my recollection of some of the details of the instrument are too indistinct to enable me to do this without some liability to err. I will, however, make a sketch which may perhaps serve the purpose.

(*Witness makes sketch.*)

(*Recess until* 3, P. M.)

I now make and present the sketch:

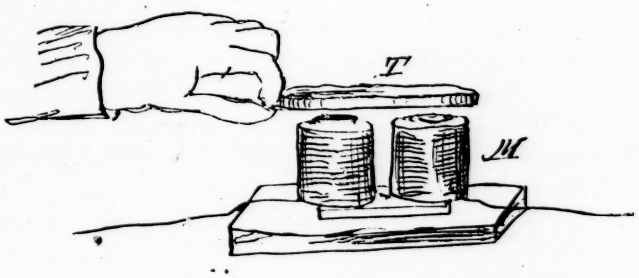


M is an electro-magnet, which has an armature *m* secured to one of its poles and placed in close proximity to, but without touching the other. A metallic support *r* is secured to the middle of the armature and to the top of the wooden sounding box *B*. *L L* is the conducting wire.

(*Mr. Hill puts the sketch in evidence to be marked "Exhibit Pope Sketch of Gray Receiver."*)

Cross-Q. 157. This sketch which you have put in represents the instrument mounted on a box. You testified that Mr. Gray at the same period showed you another experiment, in which a piece of tinned iron figured; will you please make a rough sketch showing the arrangement of the electro-magnet, and the tinned iron disc, as he had them while conducting the experiments?

Ans. I present a rough sketch:



M is the electro-magnet and *T* is the tinned iron blacking-box cover. I would say here that I am by no means sure that the particular magnet *M* used on this occasion was one of Prof. Gray's instruments. I have a dim recollection of a common telegraphic sounder belonging to the Western Union Company being used, from which the armature and its supporting lever had temporarily been removed. The tin cover was held in the hand of the receiving operator, close to the poles of the magnet, and some of the time it may have been laid upon the poles, and probably was. The whole affair was a sort of temporary expedient for exhibiting the effects of the composite electric vibrations.

(*Sketch put in evidence by Mr. Hill to be marked "Exhibit Pope Sketch, No 2."*)

Cross-Q. 158. State what further information concerning Mr. Gray's

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development of his invention, you acquired between September, 1875, and the time when you made your investigation in the fall of 1877, giving the times at which it came to your knowledge, and how?

Ans. I do not recollect that I gained any further knowledge respecting what Mr. Gray was doing, until I took up his inventions for consideration in the course of the investigation referred to, other than that I saw some of his improved forms of multiple telegraph receivers, at the Centennial Exhibition and may have seen the same in New York also.

Cross-Q. 159. Describe the improved forms of multiple telegraph receivers that you refer to.

Ans. Each receiver consisted of an electro-magnet having a steel reed armature attached to one of its poles, and free to vibrate in close proximity to the other pole. Each reed was tuned to a determinate pitch and then the electro-magnet with the reed was mounted upon an oblong resonant wooden box, very similar to the one just drawn, and of such dimensions that the body or column of air within it, would vibrate in unison with the reed, and thus reinforce the sound of the latter.

Cross-Q. 160. How did that apparatus compare with the receiver shown in Fig 6, of Bell's patent of March 7, 1876; please state the resemblances and differences?

Ans. It was practically the same thing as that shown in Fig. 6, excepting the addition of the resonant box. Both legs of Gray's electro-magnet had coils on them, but that is a matter of no special account. I think there were some adjusting devices upon Gray's receivers, which are not in Fig. 6, but I do not remember very distinctly what they were.

Cross-Q. 161. Such being the state of your knowledge of Gray's invention up to the time when you made your investigation in the fall of 1877, what additional information did you get about it during that investigation and how?

Ans. I do not remember anything of importance except the fact that he had constructed and made use of a receiver, consisting of a wash-basin of stamped tin, mounted in front of the poles of an electro-magnet; which I had not known of before. I first learned of this some time in October or November, 1877, from Mr. Gray himself.

Cross-Q. 162. You have now detailed all the information that you had about Gray's invention, down to the time when you gave your

advice to Mr. Orton's companies, to which you have heretofore referred; have you?

Ans. I think so; at least I am sure I have stated everything which affected the conclusions of the report, so far as Gray's inventions were concerned.

Cross-Q. 163. When you soon afterwards learned of Gray's caveat filed February 14, 1876, did that in any way affect the conclusion which you had reported to your employers; and if so, how?

Ans. It did not.

Cross-Q. 164. Are you acquainted with Alexander Graham Bell; if so, when did you first come to know him?

Ans. I am but slightly acquainted with him. I think I first met him about the middle of May, 1878.

Cross-Q. 165. When you made your investigation in the fall of 1877, what sources of information had you, or were accessible to you, as to the date of his speaking-telephone invention?

Ans. I had his patent, a certified copy of the file wrapper and contents of the same, and a copy of a paper which Professor Bell had read before some scientific association; I think this was all.

Cross-Q. 166. Was that the paper that Professor Bell read October 31, 1877, before the Society of Telegraph Engineers, and which has sometimes been referred to in this case as Bell's London lecture?

Ans. It was not. The London paper did not come into my possession until afterwards. The paper referred to was read in Boston, before the American Academy of Arts and Sciences, May 12, 1876, and is printed as one of the complainants' exhibits in this case on page 67 of the volume of exhibits.

Cross-Q. 167. Did you have both of Bell's patents before you in your investigation?

Ans. I did.

Cross-Q. 168. With the information thus in your possession, and after you had considered it, did you advise or encourage your employers to enter upon the manufacture and use of electric-speaking telephones, without license from the owners of the Bell patent?

Ans. It did not lie within my province to advise them to do or not to do this, but simply to lay the facts before them; and my opinion as then expressed to my employers was to the effect that a speaking-telephone apparatus could not be constructed and operated, without making use of patented or unpatented inventions, both of Gray and of Bell.

The inventions of Gray had, some of them, been patented and some had not, and it was my opinion that the patents already issued could be reissued in such manner that they would, in connection with the patents yet to be issued, cover the instrument consisting of the electro-magnet and plate-armature, and the method of actuating the same by varying currents, which I have before referred to. The essential parts of Bell's apparatus were included in his patents already issued. Hence it was possible for the Bell Company to make telephones until Gray's patents were issued or reissued, after which it would become necessary for them to make some arrangement with the owners of Gray's patents; and it was thought that the American Speaking Telephone Company might safely go on and manufacture telephones and put the same in use; and in this case even if the Bell company should immediately bring suit under their patents, that the Gray patents would be issued or reissued before such suit could be decided, and the American Speaking Telephone Company would thus be placed in a position to negotiate with the Bell Company on favorable terms. It was also expected that the commercial advantages possessed by the American Speaking Telephone Company, by reason of its alliance with the Western Union throughout the United States, would aid materially in bringing about the ultimate result aimed at.

Adjourned until April 7, 1883, at 10, A. M.

APRIL 7, 1883, 10, A. M.

Examination resumed.

Cross-Q. 169. I hold in my hand a book entitled "The Speaking Telephone, Talking Phonograph, and other Novelties." By George B. Prescott, Fully Illustrated, New York, D. Appleton & Co., 1878." and I find that chapter VII thereof extending from pages 235 to 259, inclusive, purports to be a paper read before the annual meeting of the American Electrical Society at Chicago, Illinois, December 12, 1877, by F. L. Pope, Journal of the Electrical Society, vol. I, No. 3, and is entitled by Mr. Prescott "Electro-Harmonic Telegraphy." Please look at that article and state whether it is a substantially correct copy of the paper which you prepared and sent to Chicago, but were unable to go there and read, as heretofore stated by you in this deposition.

Ans. It appears to be a verbatim copy of the paper as published in the journal of the American Electrical Society, but some additions were made by me to the original paper before its publication, and hence it is not precisely the same as when read at the meeting.

[*Respondents' counsel asks the examiner to make a copy of the article and put it in evidence as "Exhibit Pope Chicago Lecture," and he also gives notice that, at the hearing of this case, he shall use and read from Mr. Prescott's said book, chapter VII, and from the published journal of the American Electrical Society, Vol. I, No. 3, unless objection is now made by complainants' counsel to reading from said book and publication, instead of from a paper made a part of the record.*

Complainants' counsel objects to said paper and the contents thereof, so far as it purports to state anything relating to Mr. Gray, upon the ground that such statements are not based upon any knowledge of the witness, but upon mere hearsay, and objects to all those parts of it which refer to Mr. Bell, because they are matters touching which Mr. Pope had no knowledge, no means of knowledge, and not even adequate means of second hand information; and also objects to putting said Prescott book in the hands of the Court, because it contains many garbled documents and many false statements as to the origin of the speaking telephone and improvements therein, and was published by Mr. Prescott, one of the managers of the American Speaking Telephone Company, and Gold and Stock Telegraph Company, as part of a system of warfare against the owners of the Bell patent. But so far as Mr. Pope's lecture alone is concerned, complainants' counsel does not care from what book it is read, if read at all.

Respondents' counsel replies that the lecture of Mr. Pope is the only portion of the book which he proposes to read under the notice above given.]

Cross-Q. 170. Did the advice and information which you gave to your employers in the fall of 1877, as the result of the investigation which you made under Mr. Orton's direction, agree in substance with the statements which you made in the said paper, that you prepared to read at Chicago; and if not, wherein did they differ?

Ans. I do not remember the details of the report at this distance of time sufficiently well to be able to make the comparison asked for, but there is nothing in the paper referred to which disagrees with the report. Both the paper and the report were made up from the same facts and conclusions, except that, at the time of preparing the paper, I had knowledge of Gray's caveat, and also of the London lecture of Professor Bell as published, which I did not have before me when the report was made; at least so much of the report as was made by me prior to the organization of the American Speaking Telephone Company. Of course I possessed some information which, for obvious reasons it was not advisable to make public at that time. Such, for instance, as the fact, that Mr. Gray

The inventions of Gray had, some of them, been patented and some had not, and it was my opinion that the patents already issued could be reissued in such manner that they would, in connection with the patents yet to be issued, cover the instrument consisting of the electro-magnet and plate-armature, and the method of actuating the same by varying currents, which I have before referred to. The essential parts of Bell's apparatus were included in his patents already issued. Hence it was possible for the Bell Company to make telephones until Gray's patents were issued or reissued, after which it would become necessary for them to make some arrangement with the owners of Gray's patents; and it was thought that the American Speaking Telephone Company might safely go on and manufacture telephones and put the same in use; and in this case even if the Bell company should immediately bring suit under their patents, that the Gray patents would be issued or reissued before such suit could be decided, and the American Speaking Telephone Company would thus be placed in a position to negotiate with the Bell Company on favorable terms. It was also expected that the commercial advantages possessed by the American Speaking Telephone Company, by reason of its alliance with the Western Union throughout the United States, would aid materially in bringing about the ultimate result aimed at.

Adjourned until April 7, 1883, at 10, A. M.

APRIL 7, 1883, 10, A. M.

Examination resumed.

Cross-Q. 169. I hold in my hand a book entitled "The Speaking Telephone, Talking Phonograph, and other Novelties." By George B. Prescott, Fully Illustrated, New York, D. Appleton & Co., 1878." and I find that chapter VII thereof extending from pages 235 to 259, inclusive, purports to be a paper read before the annual meeting of the American Electrical Society at Chicago, Illinois, December 12, 1877, by F. L. Pope, Journal of the Electrical Society, vol. I, No. 3, and is entitled by Mr. Prescott "Electro-Harmonic Telegraphy." Please look at that article and state whether it is a substantially correct copy of the paper which you prepared and sent to Chicago, but were unable to go there and read, as heretofore stated by you in this deposition.

Ans. It appears to be a verbatim copy of the paper as published in the journal of the American Electrical Society, but some additions were made by me to the original paper before its publication, and hence it is not precisely the same as when read at the meeting.

[*Respondents' counsel asks the examiner to make a copy of the article and put it in evidence as "Exhibit Pope Chicago Lecture," and he also gives notice that, at the hearing of this case, he shall use and read from Mr. Prescott's said book, chapter VII, and from the published journal of the American Electrical Society, Vol. I, No. 3, unless objection is now made by complainants' counsel to reading from said book and publication, instead of from a paper made a part of the record.*

Complainants' counsel objects to said paper and the contents thereof, so far as it purports to state anything relating to Mr. Gray, upon the ground that such statements are not based upon any knowledge of the witness, but upon mere hearsay, and objects to all those parts of it which refer to Mr. Bell, because they are matters touching which Mr. Pope had no knowledge, no means of knowledge, and not even adequate means of second hand information; and also objects to putting said Prescott book in the hands of the Court, because it contains many garbled documents and many false statements as to the origin of the speaking telephone and improvements therein, and was published by Mr. Prescott, one of the managers of the American Speaking Telephone Company, and Gold and Stock Telegraph Company, as part of a system of warfare against the owners of the Bell patent. But so far as Mr. Pope's lecture alone is concerned, complainants' counsel does not care from what book it is read, if read at all.

Respondents' counsel replies that the lecture of Mr. Pope is the only portion of the book which he proposes to read under the notice above given.]

Cross-Q. 170. Did the advice and information which you gave to your employers in the fall of 1877, as the result of the investigation which you made under Mr. Orton's direction, agree in substance with the statements which you made in the said paper, that you prepared to read at Chicago; and if not, wherein did they differ?

Ans. I do not remember the details of the report at this distance of time sufficiently well to be able to make the comparison asked for, but there is nothing in the paper referred to which disagrees with the report. Both the paper and the report were made up from the same facts and conclusions, except that, at the time of preparing the paper, I had knowledge of Gray's caveat, and also of the London lecture of Professor Bell as published, which I did not have before me when the report was made; at least so much of the report as was made by me prior to the organization of the American Speaking Telephone Company. Of course I possessed some information which, for obvious reasons it was not advisable to make public at that time. Such, for instance, as the fact, that Mr. Gray

had made and used the receiving instrument I have already described, made from a tinned iron basin; and hence such information was omitted from the paper.

Cross-Q. 171. When you came to know of Gray's caveat and Bell's London lecture, I suppose they tended to confirm you in the conclusions at which you had already arrived, and which you had reported to your employers, did they not?

Ans. Yes, so far as they had any effect it was of that character. The caveat was evidence that Gray was an independent inventor of a speaking telephone apparatus, it having been filed on the same day as Bell's first application; so that it became a question of respective dates of conception and reduction to practice, to be determined by subsequent evidence as to who was the prior inventor. Certain statements in Bell's London Lecture also tended strongly to show that he had not reduced his invention to practice prior to the date of his application.

Cross-Q. 172. While you were making your investigations in the fall of 1877, did you get possession of some of the instruments put out under the authority of the owners of the Bell patents, and make tests of them?

Ans. Not exactly; some Bell instruments were placed in the hands of the American District Telegraph Company, of New York; I don't know for what purpose. My brother Henry was at that time superintendent of the American District Company, and one evening he brought over two sets of these instruments and attached them to a private Morse telegraph line connecting his residence with my own, near Elizabeth, N. J., on which occasion we spent two or three hours talking back and forth through the telephones. This was some time in the fall of 1877, and was, I think, the only circumstance in the nature of a test which took place before I made my report.

Cross-Q. 173. Did you ever test any telephone instruments in the basement of the Harlem Bank building, corner 124th Street and 3rd Avenue, New York city?

Ans. I did not.

Cross-Q. 174. The American Speaking Telephone Company proceeded immediately after its organization to get ready and to carry on the telephone business without license from the owners of the Bell patents, did it not?

Ans. It did.

Cross-Q. 175. One of the consequences was that the Bell Telephone Company, on the 12th day of September, 1878, brought suit in the Cir-

cuit Court of the United States for the district of Massachusetts, against Peter A. Dowd, for infringement of the Bell patents, by the use of speaking telephone instruments made by authority of the American Speaking Telephone Company, was it not?

Ans. It was.

Cross-Q. 176. Although that suit was carried on in the name of said Dowd as defendant, who was it that really assumed the conduct of the suit on the defendant's side, and became virtually the party or parties defendant, although not nominally so?

Ans. The Gold and Stock Telegraph Company was understood to be the actual defendant in the case.

Cross-Q. 177. Were you examined as a witness for the defendants in that suit?

Ans. I was.

Cross-Q. 178. You are the same Frank L. Pope who made the deposition which is printed in the records of that suit, pages 318 to 381, inclusive, are you not, and which deposition was made between May 9 and 21st, 1879?

Ans. I am.

[*Respondents' counsel requests the examiner to make a copy of said deposition from the records of the Dowd case, and put in evidence as "Exhibit Pope's Deposition in Dowd case;" and to copy therewith and put in evidence any printed matter which was made substantially a part of that deposition.*

Complainants' counsel objects that if any part of the record of the Dowd case should be put in evidence, the whole should go in.]

Cross-Q. 179. In your said deposition in the Dowd case, I find that on May 9, 1879, you were asked the following question in regard to the opinion expressed in your report to Mr. Orton and his company, in the fall of 1877: "Int. 5. Do you remain of the opinion expressed in that report as to what constitutes the fundamental principle of the speaking telephone, and as to where it is to be found described or embodied?"

To which interrogatory you answered "I do."

I will now repeat to you the same interrogatory as to your opinion to-day.

[*Complainants' counsel objects to the attempt to carve out a particular sentence from the deposition, without stating the context which defines and limits the meaning of the question and answer quoted.*]

Ans. My opinion as to this matter remains substantially unchanged.

The simultaneous transmission of composite tones and their production upon a common receiver, is equally essential, whether it be musical tones or articulate speech which is to be produced, and in that sense it is the fundamental principle of the speaking-telephone and also of the musical-telephone. Bell's transmitting apparatus makes use of that principle in one way, and Gray's in another way, but the manner in which the receiving instrument is made to produce various sounds by the influence of a varying current is essentially the same in both.

Cross-Q. 180. In the Reis telephone which would transmit and reproduce musical notes by the use of a single transmitter and a single receiver and the proper circuit connections, inasmuch as the single or common receiver was capable of emitting sounds of different pitch, and inasmuch as a number of transmitters might be operated in the same circuit simultaneously to transmit notes of different pitch at the same time, would the receiver give off the composite tone resulting from such simultaneous transmission to it of notes of different pitch, or not?

[*Complainants' counsel objects to the assumption of fact contained in the clause beginning with the second "inasmuch."*]

Ans. It would not. It would give a resultant effect of some sort, but this effect would not be the proper resultant of the several pitches, by which I mean, the resultant sound, for example, of two or more tuning-forks of different pitch, as heard in the surrounding air.

Cross-Q. 181. Would its resultant effect be an audible sound?

[*Question objected to in that it should state how the Reis transmitters mentioned are to be arranged.*

Respondents' counsel says: They are to be arranged as stated in my last question, which the witness understood and answered.

Complainants' counsel still thinks that the question should state whether they are to be arranged in some manner known to Mr. Reis, or whether they are to be arranged in a manner patented to Mr. Gray in 1876 *or* 1877, *because without such limitation the question and answer would convey no meaning.*

Respondents' counsel says that he is not aware that Mr. Gray has patented any arrangement of the Reis transmitters and receivers, and does not understand how a patent could be granted in 1876 *or* 1877 *for putting two or more Reis transmitters into the same circuit with one Reis receiver.*

Complainants' counsel states that he refers to the manner of connecting up several different vibrating circuit-breakers with one line wire, set forth in Mr.

Gray's patent 186,340, *dated January* 13, 1877, *applied for January* 27, 1876, *set up in the answer of the Dowd case, much referred to in the evidence in connection with various receivers, and re-issued as re-issue Nos.* 8869, 8870, *Aug.* 26, 1879, *and to the manner of placing several vibrating circuit breakers in connection with one line wire, shown in the drawing Fig.* 4, *page* 114, *of Mr. Bell's deposition in this case.*]

Ans. It would. To avoid any possible misapprehenson I wish to say that in answering this and the preceding question, I understand the expression "A number of transmitters might be operated in the same circuit simultaneously," to mean that they are to be connected in series one after the other, which is the accepted technical meaning of the expression "operated in the same circuit."

Cross-Q. 182. So connected, they would fail to send any impulse through the line except when all the contact points happened to be simultaneously closed, would they not?

Ans. They would.

Cross-Q. 183. And the loss of the impulses when some of the contacts were closed and others were not, would produce a peculiar resultant sound which would not be a true combination of all the sounds made into the transmitters, but only a portion of them; am I correct?

Ans. You are.

Recess until 3, P. M.

Cross-Q. 184. But if you should connect several Reis transmitters with a single circuit containing a Reis receiver by means of the peculiar connecting arrangement shown in Mr. Gray's patent of January 13, 1877, No. 186,340, then in that case you would get from the receiver a composite sound which would be the proper resultant of the several pitches of the sounds made into the transmitters, would you not?

Ans. Yes.

Cross-Q. 185. The Dowd suit, hereinabove referred to, was terminated by an arrangement between the controlling parties complainant and defendant, whereby said defendant party or parties acquired certain interests in, or privileges under, the patents of the Bell Telephone Company, and whereby the Bell Telephone Company acquired certain rights under the Gray patents and inventions; is that the fact?

[*Objected to as new matter.*]

Ans. I know that the controversy was settled and the suit terminated at or about the time the settlement was made, but I do not know, nor was I informed at the time, what the details of the settlement were.

Cross-Q. 186. Give the time when that settlement was effected, as nearly as you can.

Ans. According to my recollection, it must have been in the fall of 1879.

Cross-Q. 187. According to the printed record of the evidence in the Dowd suit, it appears that the last depositions which were taken by the complainants in reply to the defendant's evidence, to wit: The deposition of Edward E. Quimby and Henry B. Renwick, the last two depositions printed in said record, were taken on and about September 19, 1879; said settlement was effected very soon after that date, was it not?

[*Same objection.*]

Ans. It was not long afterward, according to my recollection—I should say within a month or two, but as I had nothing to do with that matter, my recollection in regard to it is not very distinct.

Cross-Q. 188. Were you still in the employ of the Western Union Telegraph Company, the Gold and Stock Telegraph Company, or the American Telephone Company, or any or all of them at the time when that settlement was effected?

[*Same objection.*]

Ans. I was in the employ of the first two companies named at the time of the settlement.

Cross-Q. 189. You understood that the differences theretofore existing between your said employers and the Bell Telephone Company were by that settlement arranged satisfactorily to your employers, did you not?

[*Same objection.*]

Ans. I understood that they had agreed upon a settlement of all the points in dispute; I had no means of knowing how well they were satisfied with it.

Cross-Q. 190. At about what time did you cause to be made and test the instruments mentioned in your examination-in-chief, which you say in substance you had made in order to determine whether Fig. 7 of Bell's patent of March 7, 1876, exhibited an apparatus capable of transmitting and reproducing articulate speech?

Ans. It was in the latter part of April, 1879; it may possibly have been in the early part of May, but I think it was in April.

Cross-Q. 191. Was it before or after you commenced giving your deposition in the Dowd case, on May 9, 1879; and was it before or after the close of Edward S. Renwick's deposition on behalf of defendant, in that case, which was commenced on April 24, 1879, and concluded on May 1, 1879, as appears by the record of that case?

Ans. It was after my deposition was taken; and upon examination of the record in the Dowd case I can fix the date pretty accurately as having been after June 20, 1879, and probably within two weeks from that date. It could not have been as early as stated in my last answer.

Cross-Q. 192. I find by the record in that case that the defendants closed their evidence May 21, 1879, and the complainants commenced to take their evidence in reply June 17, 1879, by examining Professor Cross, who seems to have concluded his deposition June 19, 1879. Was it after Professor Cross' deposition was concluded?

Ans. It was.

Cross-Q. 193. What reasons caused you to have those instruments made and tested after Mr. Edward S. Renwick, the defendant's expert, had testified that he, with Mr. William M. Goodridge and Mr. Elisha Gray and Mr. Glass, the foreman of the shops at the Western Union Telegraph Company, had conducted a set of experiments with an apparatus constructed in exact conformity with the drawing and specification of Professor Bell's patent of March 7, 1876, as respects the matters referred to in the fifth claim thereof, and had failed to get any articulation from them?

[*Question objected to for the reason that the whole testimony taken together shows that no witness, except Mr. E. S. Renwick, assumed the responsibility of saying, or ventured to state, that the instruments produced by Mr. Renwick conformed to the description of the Bell patent, or were made in a workmanlike manner, and because the testimony tended to show that the contrary was the fact.*]

Ans. I wished to satisfy myself whether or not the statements of the complainant's expert, Professor Cross, were well founded, and in order to do this I decided to make the experiment.

Cross-Q. 194. Up to that time had you believed that the apparatus shown in Fig. 7 of Bell's patent of March 7, 1876, was not an operative speaking telephone, and not capable of transmitting and reproducing articulate speech?

Ans. I was uncertain, and in the absence of an actual test by myself, I had never arrived at a positive opinion in reference to the matter one way or the other.

Cross-Q. 195. Had you mentioned that question or doubt to your employers in the fall of 1877 in connection with your investigation and report to them; and, if so, what did you say to them about it?

Ans. I don't recollect that I said anything on that point. If the ques-

tion had arisen in my mind, I should have been likely to have made the experiment at the time and settled it.

Cross-Q. 196. Who was the workman who made the instruments which you tested in the summer of 1879 for the purpose of satisfying your mind on that point?

Ans. I have not the slightest recollection, and doubt if I knew his name even at the time.

Adjourned until 10.30, A. M., April 9, 1883.

APRIL 9, 1883, 10.30, A. M.

Examination resumed.

Cross-Q. 197. At what place and under what conditions did you make the test referred to in my last interrogatory?

Ans. At the building in New Church street, New York, now occupied by the Western Electric Mfg. Company. It is directly in the rear of Trinity church-yard, on the opposite side of Church street therefrom. I was down in the basement or cellar; the other operator was up on the second or third floor.

Cross-Q. 198. Who was the other operator?

Ans. I do not recollect further than that it was one of the men in the establishment who was accustomed to speaking through telephones for testing purposes.

Cross-Q. 199. Was that building occupied by the Western Union Telegraph Company at the time?

Ans. It was, or at least a portion of it. The whole establishment was originally owned by the Western Union Company. At a later date, and I think after the time these experiments were made, the greater part of the concern was either sold or leased to the Western Electric Manufacturing Company, although the Western Union still continued to have a sort of experimental shop under their own management, which occupied a small portion of this building.

Cross-Q. 200. Where were the telephones made which were put out by the American Speaking Telephone Company, or Gold and Stock Telegraph Company up to that time?

Ans. Most of them, I think, were made in this establishment; others were made in Chicago.

Cross-Q. 201. What concern made them in Chicago, and why were they made there?

Ans. They were made by the Western Electric Manufacturing Company, for the purpose, I suppose, of more conveniently and promptly supplying local requirements in that particular section of the country.

Cross-Q. 202. Mr. Gray was connected with the Western Electric Manufacturing Company, was he not?

Ans. I understood so; at least his name appeared on the letter-heads of the concern, I believe, as an electrician.

Cross-Q. 203. Was the man who made your test instruments in the summer of 1876, one of the workmen employed in making telephones for the Gold and Stock Telegraph Company or the American Speaking Telephone Company?

Ans. I think not; my impression is that he was a workman employed on miscellaneous experimental work, a great deal of which was going on all the time.

Cross-Q. 204. What kind of a looking man was he?

Ans. I have no recollection.

Cross-Q. 205. What instructions did you give him?

Ans. I gave him a copy of the patent and told him to make a pair of telephones in accordance therewith, that could be talked through, if it was possible to do it. I don't pretend to give the exact words, but that was the substance of my instructions.

Cross-Q. 206. Did you furnish him any drawing other than the patent drawing?

Ans. I am very certain that I did not.

Cross-Q. 207. Did you tell him to make a very light armature?

Ans. I don't think I did; I am quite sure that I gave him no instructions whatever other than those contained in the patent, and those I have already mentioned.

Cross-Q. 208. How came that particular workman to be selected for that job?

Ans. I presume he was selected by Mr. Phelps, although my recollection is not distinct in this particular case. I frequently had occasion to have experimental work made, and my usual custom was to go to Mr. Phelps and request him to place the services of a competent man at my disposal, explaining to him, of course, in a general way, what I wanted to have done. As I have said, I do not recollect the circumstances of this occasion as distinguished from other similar ones.

Cross-Q. 209. What Mr. Phelps was that, and what connection had he with the Western Union Telegraph Company, the Gold and Stock Tele-

graph Company or the American Speaking Telephone Company, and had he taken any part, and, if so, what, in the practical development of the telephone?

Ans. Mr. George M. Phelps; he was superintendent of the manufactory and was employed by the Western Union Telegraph Company. I do not know what arrangements, if any, the other companies named, had with him with reference to his services. He experimented a great deal with telephones in 1877 and 1878, and devised many of the patterns used by the Gold and Stock Telegraph Company.

Cross-Q. 210. Did he make or patent any telephone inventions of his own?

Ans. He did.

Cross-Q. 211. If I understand you correctly, you do not remember the dimensions of the several parts of those test telephones which you had made, so as to be able to state them now; am I correct?

Ans. I don't remember definitely; I am quite confident that the membranes were not much less than two inches in diameter, nor more than three.

Cross-Q. 212. Do you remember whether said test instruments had any means of adjusting the distance of the armature from the pole of the electro-magnet?

Ans. I remember that they had a means of varying the normal relation of the parts, which is usually spoken of as an adjustment, but which could not be altered while the instruments were actually in use.

Cross-Q. 213. What were the length, breadth, and thickness of their armatures?

Ans. I cannot say definitely at this distance of time; but the impression that remains on my mind, which may or may not be correct, is that they were about a quarter of an inch wide, a sixteenth thick, and perhaps an inch long. I should not like to assert this very positively. I don't think, however, that they were much, if any smaller, than the dimension I have named.

Cross-Q. 214. How were the armatures supported and attached?

Ans. They were supported by some sort of a hinge; I don't recollect what, and I have no distinct recollection of the attachment of the armature to the membrane. I remember of one such pair of instruments in which two little copper burrs, about three sixtenths of an inch in diameter, were clamped one on each side of the membrane at its center by a little brass nut working upon a threaded pin projecting from the armature

but whether this was in the instruments inquired about or some other ones I am unable to say.

Cross-Q. 215. How did the armatures hang with relation to the poles of the electro-magnets—was their surface normally parallel to the end surface of the pole, or was it inclined as shown in Fig. 7, of Bell's patent of March 7, 1876?

Ans. That would depend upon the normal adjustment of the instruments. Although I do not now remember as to the fact, I have no doubt that I worked the instruments with their armatures parallel and not inclined to the face of the poles.

Cross-Q. 216. Describe the construction and dimensions of the electro-magnets and their several parts as contained in those test instruments, and state whether they were polarized by permanent magnets or by a battery.

Ans. They were polarized by a battery and not by permanent magnets. My recollection of the magnets, so far as I have any, leads me to think that they were composed of the cores and spools of a standard Morse relay, in which case the latter would be about an inch and an eighth long and an inch in diameter, with a core of about five sixteenths diameter and say an inch and a quarter long. The wire would be probably No. 30, giving a resistance of fifty or sixty ohms for each instrument.

Cross-Q. 217. Was there only one pair of these instruments made, or more than one?

Ans. Only one pair was ever made by my direction.

Cross-Q. 218. And you only tested that one pair?

Ans. That is the only instance, so far as I can recollect, that I ever tried to talk through a membrane telephone prior to the tests made last April in connection with this case. I refer to the tests made at Boston with complainants' exhibits mentioned in my 13th and 14th answers.

Cross-Q. 219. In making your said tests in 1879 at New York, how far were the armatures adjusted from the poles of the electro-magnets?

Ans. Just as close as I could get them without having them touch when in vibration.

Cross-Q. 220. With the electro-magnets constructed and used in your test in the summer of 1879, and having the resistance and battery power there used, how far would the field of force extend outward from the end of the pole of the electro-magnet, and in the direction of a prolongation of its axis?

Ans. It is impossible to give a definite answer to the question. Mathematically speaking, the field extends to an infinite distance; practically

speaking, it extends to the distance within which the required effect can be produced upon the armature under the particular conditions existing. In the experiment referred to the armature was probably not more than one thirty-second of an inch, if as much, from the pole of the magnet.

Cross-Q. 221. Would the armature be affected at all by the magnetism of the electro-magnet with an air space of half an inch between them?

Ans. Undoubtedly it would.

Cross-Q. 222. In making those tests in New York in 1879, did the instruments transmit speech intelligibly at first, or did you make or cause to be made, some adjustment of them, before understanding speech through them?

Ans. They required considerable adjustment, as nearly as I can recollect, before I could understand what was said.

Cross-Q. 223. What was the condition of the rooms in which they were tested, as to stillness, and quiet, and freedom from interruption; and what precautions were taken, if any, to insure such conditions?

Ans. I placed myself with the receiving instrument in a cellar or vault below the surface of the ground, and at the rear of the building—a sort of storage place. It was absolutely quiet, at least during the intervals between the passage of trains on the elevated railroad, which ran in front of the building seventy-five or a hundred feet distant. I have no recollection of the conditions at the transmitting end.

Cross-Q. 224. Did you use a metallic circuit or partly metallic and partly earth?

Ans. Metallic, I believe.

Cross-Q. 225. After you got the instruments adjusted so as to hear through them, what, and how much did you hear and understand?

Ans. I cannot say positively. We conversed back and forth, using the membrane telephones in one direction, and some other hand magneto-telephone—I think it was the one called the "Crown"—in the other direction on another circuit. I continued the experiment until perfectly satisfied that the apparatus would transmit speech which could be understood without difficulty.

Cross-Q. 226. The other circuit which you used was in the nature of a "tell-tale" circuit, was it not?

Ans. Yes, it amounted to that. The instruments, when made as they were, according to Fig. 7, of the Bell patent, are not very well adapted for reciprocal working on account of the shape of the cones, so we used another pair of ordinary telephones for communication in the other direction.

Cross-Q. 227. You used as a transmitter the instrument that has its cone expanding outward from the diaphragm, and as a receiver the instrument with the cone contracting as it extends outward from the diaphragm, did you not?

Ans. Yes.

Recess until 3, P. M.

Cross-Q. 228. How long were those tests going on?

Ans. Probably from one to two hours.

Cross-Q. 229. After you succeeded in getting the instruments adjusted so as to transmit speech, did the transmitter have to be adjusted again during the progress of the tests, or not?

Ans. No; I am quite sure that it was not changed after we got it right.

Cross-Q. 230. How long did the tests continue after you got it right?

Ans. I should say perhaps half an hour.

Cross-Q. 231. Was the talking going on pretty constantly through the instruments during that half hour?

Ans. Not all the time. The articulation became bad during the course of the experiment, so that the words had a grunting sort of a sound. We found this to be due to the dampening of the transmitting membrane; and I noticed exactly the same performance in the case of the membrane instruments which I tried in Boston last year.

Cross-Q. 232. Would you say that such instruments were adapted to be put out to the public and used generally for the purposes for which electric speaking-telephones are used, and in the manner in which they are generally used; or, on the other hand, that they were chiefly useful for demonstrating the possibility of transmitting articulate speech by electricity, and the general principles involved in the construction and arrangement of circuits and instruments for that purpose?

Ans. They were certainly instruments much inferior to those in general use, for the reason that the sounds produced were faint, and they apparently could not be used continuously, as in ordinary conversation, more than ten or fifteen minutes at a time. On the other hand the articulation was good, its only noticeable defect being a certain tendency to hollowness, which I presume was principally due to the shape of the mouthpiece of the transmitter. The instruments were certainly of some utility, because questions could be asked, and a perfectly intelligible answer received, without the slightest difficulty, provided the operators were in a perfectly quiet place. Of course they would not very well serve for all the pur-

pose for which telephones are now used, but if one had nothing better they would answer very well in a great many cases.

Cross-Q. 233. I call your attention now to Bell's Toronto drawing, which was made by him December 28, 1875, in order to exhibit to the Hon. George Brown, of Toronto, Canada, whom he desired to interest financially in his inventions, the results of his efforts up to that time. Please look at the figure in the lower right hand corner of said drawing, which represents an arrangement similar to that shown in Fig. 7 of the drawing of his patent of March 7, 1876, and under which Mr. Bell wrote as follows: "First attempt to transmit the human voice. The varying pitch of the voice could be distinguished, but not the quality. A sort of muttering effect was perceived at the receiving end, when a person talked very loudly at the other end." Would an apparatus which would only accomplish what Mr. Bell himself stated on the 28th of December, 1875, to be true of the apparatus there represented, be of any practical utility or use for the purposes of a speaking telephone or for the transmission of speech?

(*Question objected to as a misstatement of the testimony.*)

Ans. I don't think it would.

Cross-Q. 234. But assuming it to be true as he there stated, that the varying *pitch* of the voice could be discriminated, then could it be made to transmit Morse signals for multiple telegraph purposes, and if not, why not?

Ans. It could be made to receive one set of Morse signals; and I see no reason why it might not simultaneously receive and render audible more than one set of signals. In saying this, I of course assume that the analysis of sounds representing different sets of signals is not to be effected by the receiving instrument, but by the ear of the listening operator.

Cross-Q. 235. Let us refer now to the instruments "Reproduced C" and "Reproduced I," tested at New York in the latter part of March, 1882, as mentioned in your examination-in-chief. Each of those instruments contained a vibratory diaphragm capable of acting as an armature, an electro-magnet polarized by a permanent magnet, and having its pole or poles in close proximity to the central portion of said diaphragm, and also, a mouthpiece through the opening of which, sound waves could be impelled towards or from the diaphragm; did it not?

Ans. The diaphragm both in "C reproduced" and "I reproduced," was not capable of acting as an armature or at least did not so act, but in

both instruments the armature was attached to the diaphragm, and in that respect the instruments differ from the description in the question.

Cross-Q. 236. In other respects the instruments did not differ from the description in the question, did they?

Ans. Not materially. The poles of the magnet were in close proximity, not exactly to the center of the diaphragm, but to the front of a flat armature, the back of which armature was attached to the diaphragm at or near its center. Otherwise the description appears to be correct.

Cross-Q. 237. You have testified, on pages 1336 and 1337, that with the instruments "C reproduced" and "I reproduced" in the line, as transmitter and receiver, certain words were transmitted and understood, such as "What instrument," "Dan, can you hear me," Mr. Benjamin," "What time have you," etc.; could so much as that have been accomplished with those magneto instruments, if they had not operated by the method and contained the means set forth in the fifth claim of Bell's patent of March 7, 1876, as you interpret that claim?

Ans. Certainly not.

Cross-Q. 238. You have also testified that certain words and sentences, which were attempted to be transmitted through those instruments during said tests were not understood; did you observe anything in the construction of those two instruments which, in your judgment, would account for the defects in their operation; if so, state fully what it was, together with your reasons for your opinion.

Ans. I made no examination with that object in view, and hence cannot pretend to give a reason for the peculiarities of their performance. I can only say that it struck me that the performance would have been better if the electro-magnet of "I reproduced" had been smaller, and the diaphragms of both instruments of less diameter. Of course I do not mean to be understood that there might not have been other reasons which would account more completely for the results obtained.

Cross-Q. 239. But you do mean to be understood that those were the only reasons that occurred to you at the time, do you not?

Ans. Yes; these appeared to me to be the most obvious defects at the time, and I don't remember that any other reasons occurred to me.

Cross-Q. 240. Please look at the drawings that have been put in evidence, made by Mr. Knight, representing those two instruments "C reproduced" and "I reproduced" as used in the New York tests, and state whether if you should put those drawings in the hands of Mr. Phelps' man, who made your test instruments in 1879, without any directions as

to the size of the instruments, and should instruct him to make a pair of them for you and make them work if it could possibly be done, he would be able so to do.

Ans. I think he most probably would.

Cross-Q. 241. In describing the instrument "F reproduced" in your answer to question 83, you state that "the stationary electrode, as it may be termed, consists of a little pile of powdered carbon the particles of which may be described as semi-conductors." What do you there mean by a little pile?

Ans. I mean the mass of carbon powder which is placed in the cup marked *D* in Mr. Knight's drawing, and which I understand to be deposited in a loose condition therein.

Cross-Q. 242. Did you understand that carbon to be in the form of a pile, or higher at its middle than at its edges?

Ans. I supposed it to be a little higher in the middle than at the edges, before the placing of the upper plate upon it.

Cross-Q. 243. What caused you to suppose that?

Ans. I cannot say whether I received the impression from something that was said at the time of the New York tests, during the operation of adjusting the transmitter, or in some other way.

Cross-Q. 244. You also stated that "The loose carbon powder has no elasticity, and no tendency to restore itself after having been displaced." Did you mean that that is a characteristic of loose carbon powder in every form, or only in the form of a pile higher at the middle than at the edges?

Ans. I mean that it is a characteristic of it when used in the manner in which it was used in that instrument, whether the upper surface of the pile is highest at its central portion or not.

Cross-Q. 245. You did not mean to state, as a general proposition, that carbon powder is not elastic, did you?

Ans. No; I do not mean to say that it is absolutely inelastic. When I said it had no tendency to return to its original position, I should have stated the fact more accurately if I had said it did not return to its original position.

Cross-Q. 246. How would a slight dampening of the carbon powder in the box which contained it, affect the shifting of its particles and the results of its operation in such an instrument?

Ans. I cannot speak from knowledge or observation, but I think the particles would move with somewhat less freedom than when dry. I

should not suppose that it would make any great difference in the results as regards the transmission of sounds.

Cross-Q. 247. If the walls of the box which contained the carbon powder were cylindrical, and the upper metallic plate which rested upon the carbon powder were circular, and accurately fitted within the walls so as to practically prevent the powder from escaping upward between the edges of the plate and the walls, then the only effect which the operation of the instrument would have upon the powder would be to gradually beat it down and compact it in the box; would it not?

Ans. It would.

Cross-Q. 248. Is there anything in compacted carbon which renders it unfit to be used as a low conductor or resistance for the purpose of varying the electric current in a speaking telephone?

Ans. No; I do not know that there is.

Cross-Q. 249. Is it not the substance ordinarily used for that purpose in telephone transmitters?

Ans. The answer depends upon what is meant by compacted carbon. As ordinarily used the particles of carbon have been cemented together by pressure and heat so as to form a hard, solid substance which may be said to be compacted carbon, but is different in its physical properties from dry carbon powder which has simply been compressed so as to bring its particles close together.

Cross-Q. 250. Please explain that difference in physical properties.

Ans. The principle difference is found in the greater hardness and resiliency of the prepared or solid carbon. The hard carbon is also a better conductor of electricity than the compressed powder.

Cross-Q. 251. Then, if two telephone transmitters were constructed, one like "Exhibit F" with the carbon powder interposed to vary the current, and the other like the modern battery-transmitter with the hard prepared carbon interposed to vary the current, the two instruments would operate on the same general principle, and with the same general mode of operation, but the latter would be an improvement over the former; is not that the fact?

Ans. So far as the characteristics of the carbon are concerned, I think the principle would be essentially the same.

Adjourned until April 10, 1883, at 10, A. M.

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Examination resumed.

Cross-Q. 252. On your 75th answer, page 1337, referring to your test of "F reproduced" as a transmitter and "B reproduced" as a receiver, you say that "not enough could be understood of any sentence to convey an intelligible idea of its meaning, except in the case of a few familiar and oft repeated phrases, which were capable of being recognized by their rhythm, even when articulation was almost altogether absent." Do you think that is a truthful statement of fact?

Ans. I think so.

Cross-Q. 253. On page 1323 you testify that the following sentence was correctly heard with "F reproduced" and "B reproduced," to wit: "I am speaking now into the old tumbler instrument; do you hear me?" Do you consider that a familiar and oft repeated phrase capable of being recognized by its rhythm, even when articulation is almost altogether absent?

Ans. Yes; that is one of the phrases that I particularly had in mind when making the statement.

Cross-Q. 254. Could two instruments—for example, "F reproduced" and "B reproduced"—transmit that phrase so that it could be heard and understood, if they did not employ the method and embody the means referred to in the fifth claim of Bell's patent of March 7, 1876, as you construe that claim to mean?

Ans. That would depend on what the facts were in the particular case. If this sentence, or any sentence, were transmitted by these instruments and recognized and understood by a person who had not before heard the particular phrase, then, in my opinion, this fact would prove that the words were transmitted, by the agency of the method and means referred to in the question. But I think that a familiar word, phrase, or even sentence, might possibly be recognized by its pitch and the rhythm of its syllables, without necessarily having been transmitted by that method and means.

Cross-Q. 255. Do you believe that the sentence which I quoted above was transmitted and understood by said method and means in the New York test?

Ans. Not altogether. My reason for thinking so is that many shorter sentences which were less frequently used, and therefore unfamiliar, were not recognized or understood. To speak accurately, my opinion is that the words of the sentence quoted were partially, though not completely, articulated by the apparatus.

Cross-Q. 256. That is to say, if I understand you correctly, with a pair of instruments with which only familiar expressions can be understood, you explain the result by assuming that there is only a partial articulation, and the mind of the receiving operator, by his familiarity with the expression transmitted, is led to the correct phrase and supplies what is wanting; is that your idea?

Ans. That is my explanation of the effects in this particular case. It would not necessarily be true of all apparatus in which similar effects might manifest themselves.

Cross-Q. 257. Explain how you could account for it on any other ground with any other apparatus by which similar effects were manifested.

Ans. In the case of a pair of magneto instruments it is easily conceivable that the sounds produced might be so weak as to be scarcely heard by the receiving operator. In that case his sense of hearing might be able to appreciate the most prominent sounds, such as the overtones and the like; and in that case he might be unable to recognize the sounds simply because he did not hear the whole of them. Hence the actual result would be substantially the same as if the weaker sounds had not been transmitted.

Cross-Q. 258. On the same page, 1323, you state that the following words were heard through "F reproduced" and "B reproduced," to wit: "Galvanometer in circuit," "I took," "New England," "Music-box," "Battery," "Adjourn for lunch"; do you think that those words were understood by the receiving operator because he was familiar with them and expected to hear them, or that they were transmitted and understood by the method and means indicated in said fifth claim of Bell's said patent.

Ans. I do not think that any of the phrases quoted were anticipated by the receiving operator, with the possible exception of "Galvanometer in circuit"; and that he must, therefore, have recognized them by reason of their being completely articulated. I consider, therefore, that it must necessarily follow that these words were in fact transmitted by the method and means set forth in the fifth claim of Bell's patent.

Cross-Q. 259. From your testimony-in-chief I see that the following expressions were heard and understood when transmitted through "F reproduced" as a transmitter with "A" as a receiver, to wit: "1, 2, 3, 4, 5, 6, 7, 8, 9, 10," "What shall I do now," "Very well, I now will read," "Take it off and put on the Tisdel," "1, 2, 3, 4, 5, 6, 7, 8, 9, 10," "Do

you hear that," "No, that was not right," "I will read from the newspaper," "New York Daily Tribune, March 29," "Mr. Lowell, our minister to England," "forwarded to the Home Department," "I will read another article," "How did you hear that," "Did you hear me then," "How plainly can you hear me," "Now listen and I will read," "Is this any improvement," "Answer what instrument you have," "I will read again," "What is the reason you can't hear now," etc.; do you think those expressions were transmitted and understood by the method and means referred to in said fifth claim?

Ans. I think that many of them were, perhaps not all of them.

Cross-Q. 260. In the tests set forth from the bottom of page 1330 to the lower part of page 1336 the Drawbaugh instrument "E" was used on the tell-tale line; was it not?

Ans. I believe it was.

Cross-Q. 261. On those pages the right hand columns contain what was sent through the tell-tale line from the front room to the back room, do they not?

Ans. Yes.

Cross-Q. 262. In your examination-in-chief, from pages 1340 to 1348, I find that with "F reproduced" as a transmitter, and a modern receiver, such as a Tisdel magneto or a Bell magneto in the line, the following expressions, among others, were transmitted and understood, to wit: "Shall I read an article for you now," "All right, I'll read", "New York Tribune, March 29", "What is the matter", "No, that is not what I said", "Have you heard of Judge Wallace's appointment", "How do you like it", "Is Mr. Storrow near you", "I said, 'No, that is not what I said'", "I will speak louder", "How's that, better or worse", "Do you like the Bell receiver better than the Tisdel", "Do you hear more plainly through the Bell", "I will adjust it again", "Dan Drawbaugh is standing by my side", "I will read another article", "Do you get it better now than before", "I am speaking very loud", "Is that better than before, or not", "I am speaking very low now", "I will speak lower still; did you hear that", "What do you think about it", "Well, what do you think about it now", "I said, 'I am speaking not much above a whisper'", "I will read from the New York Tribune of yesterday", "Tell the man at the telephone to speak louder to Mr. Ott", "I will read something about Ben Butler," "Why the devil can't you hear me when I read, as well as when I talk?" "Well, you get that pretty straight:" it appears from this, that when the instrument "F," was in proper adjustment, it was capable of

transmitting spoken sentences, so that they could be heard and understood at the receiver; does it not?

Ans. It does.

Cross-Q. 263. You have referred to the instrument "Reproduced B," as having the box so loosely attached, that on one occasion during the tests in New York, it had slipped, and Mr. Benjamin had to adjust it again; or, to be more correct, you say in answer 40, page 1307, that you heard Mr. Benjamin say so at the time; do you know how he adjusted it, and how he secured it in the adjusted position?

Ans. I do not.

Cross-Q. 264. Do you know, or did you hear of its slipping again after that one occasion which you mentioned?

Ans. Not that I recollect.

Cross-Q. 265. So far as the slipping of the box is concerned, either in "Exhibit B," or "Exhibit Reproduced B," do you think that anybody using the instrument, would have any difficulty whatever in securing the box so that it would not slip, and that, too, by the use of the most ordinary expedients, such as any person, skilled or unskilled, would know how to apply?

Ans. Not in the least. It would be very easy to secure it by obvious expedients.

Cross-Q. 266. A wooden toothpick slipped in between the strap and the box, like a wedge, would answer the purpose, would it not?

Ans. Undoubtedly, if the strap were well secured to the base.

Cross-Q. 267. What mechanical part, essential to a telephone receiver, do you find in Bell's instrument illustrated in Fig. 7 of his patent of March 7, 1876, that you do not find in Drawbaugh's instrument "Reproduced B"?

Ans. Nothing; I regard the two receivers as substantially alike.

Cross-Q. 268. What mechanical part essential to a telephone transmitter do you find illustrated in Fig. 7 of Bell's said patent, that you do not find in Drawbaugh's instrument "Reproduced B"?

Ans. No essential part; but in answering this I assume that a source of electricity must be used in connection with each to constitute it a transmitter. The instruments themselves are substantially the same.

Cross-Q. 269. A continuous electric circuit, including a battery and two of Drawbaugh's "Reproduced B" instruments, would present substantially the same contrivance and arrangement as is shown in Fig. 7, of Bell's patent of March 7, 1876; would it not?

Ans. It would.

Cross-Q. 270. What mechanical part, essential to a telephone transmitter or a telephone receiver, do you find represented in Fig. 7, of Bell's said patent, that is not contained in Drawbaugh's reproduced instruments "C" and "I"?

Ans. Assuming "C" and "I" to be coupled together in a continuous circuit, there appears to be nothing essential contained in Fig. 7 of the patent that is not found substantially in instruments "C reproduced" and "I reproduced."

Cross-Q. 271. Answer the same question, assuming a continuous circuit with Drawbaugh's instrument "C reproduced," and his instrument "A" in the line.

Ans. I make the same reply to this question, with the understanding that a battery is placed in the continuous circuit with the Drawbaugh instruments.

Cross-Q. 272. Answer the same question, assuming a continuous circuit with a battery and with Drawbaugh instrument "I reproduced," and his instrument "A" in the line.

Ans. The same answer is also applicable to this couple.

Cross-Q. 273. Answer the same question with Drawbaugh's instrument "B reproduced," and his instrument "F," in a continuous circuit with a battery.

Ans. The same answer is also applicable to this couple.

Cross-Q. 274. Answer the same question with Drawbaugh's instrument "B reproduced," and his instrument "D," in a continuous circuit with a battery.

Ans. Assuming "D" to be in working condition, which it was not when I saw it, I again repeat the answer with reference to this couple.

Cross-Q. 275. Answer the same question with Drawbaugh's instrument "C reproduced," and his instrument "E," in a continuous circuit with a battery.

Ans. I again repeat the same answer as to this couple.

Cross-Q. 276. Answer the same question, assuming Drawbaugh's instrument "I reproduced," and his instrument "E," in a continuous circuit with a battery.

Ans. I repeat the same answer as to this couple.

Cross-Q. 277. Answer the same question, assuming Drawbaugh's instrument "C reproduced," and his instrument "D," in a continuous circuit with a battery.

Ans. I repeat the same answer, on the assumption, as before, that "D" is in working order.

Cross-Q. 278. Answer the same question, assuming Drawbaugh's instrument "I reproduced," and his instrument "D," in a continuous circuit with a battery.

Ans. I repeat my answer which is the same as to the preceding question.

Cross-Q. 279. Answer the same question assuming Drawbaugh's instruments, "D" and "E," in a continuous circuit with a battery.

Ans. My answer is the same as to question 277.

Recess until 3, P. M.

Cross-Q. 280. Answer the same question assuming a continuous circuit with a battery, with Drawbaugh's instruments "A" and "Reproduced B" in line?

Ans. I find no mechanical part essential to a telephone transmitter or telephone receiver represented in Fig. 7 of Bell's patent that is not contained in the instruments referred to in the question, assuming, as before, that they are placed in a continuous circuit with a battery.

Cross-Q. 281. Answer the same question, assuming Drawbaugh's "Reproduced B," and "Reproduced C," in a continuous circuit with a battery.

Ans. I repeat my last answer as to this couple.

Cross-Q. 282. Answer the same question assuming Drawbaugh's "Reproduced B," and "Reproduced I," in a continuous circuit with a battery.

Ans. I repeat my answer to question 280 as to this couple.

Cross-Q. 283. Answer the same question, assuming a couple of Drawbaugh's instruments "Reproduced C," in a continuous circuit with a battery.

Ans. I repeat my answer to question 280 as to this couple.

Cross-Q. 284. Answer the same question assuming a couple of Drawbaugh's instruments "Reproduced I," in a continuous circuit with a battery.

Ans. I repeat my answer to question 280 as to this couple.

Cross-Q. 285. Answer the same question, assuming a couple of Drawbaugh's instruments "E," in a continuous circuit with a battery?

Ans. I repeat my answer to question 280, as to this couple.

Cross-Q. 286. Answer the same question, assuming Drawbaugh's instruments "A" and "E," in a continuous circuit with a battery.

Ans. I repeat my answer to question 280, as to this couple.

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Cross-Q. 287. Answer the same question assuming Drawbaugh's instruments "A" and "D," in a continuous circuit with a battery?

Ans. I repeat my answer to question 280 as to this couple, assuming "D" to be in its original uninjured condition.

Cross-Q. 288. Answer the same question, assuming a couple of Drawbaugh's instruments "D," in a continuous circuit with a battery?

Ans. I repeat my answer to question 280 as to this couple, assuming "D" to be in its original uninjured condition.

Cross-Q. 289. In a speaking-telephone line, it is not necessary to have a battery in the line, provided the electro-magnet of the transmitting instrument is polarized by a permanent magnet; is it?

Ans. It is difficult to get any results without a battery, unless the transmitting and receiving magnets are both polarized. The results are, at least very inferior, and I should rather say that the battery is necessary, unless both magnets are polarized.

Cross-Q. 290. In Drawbaugh's instruments "D," "E," "Reproduced C," and "Reproduced I," the electro-magnets are polarized by a permanent magnet; are they not?

Ans. They are.

Cross-Q. 291. Suppose we should couple those instruments together in a continuous circuit without a battery, in any of the following couples, to wit: "C & D; C & E; C & I; D & E; D & I; E & I;" or should use a pair of the same instruments as "C & C; D & D; E & E; or I & I;" what part essential to a speaking-telephone transmitter or receiver, do you find represented in Fig. 7, of Bell's patent of March 7, 1876, that you would not find contained in each of said couples?

Ans. Every part essential to a speaking-telephone transmitter or receiver, which is represented in Fig. 7, of the patent, is represented by a corresponding part in each of the couples enumerated in the question. The construction is not precisely the same, nor are the proportions similar in many cases. And the source of electricity, which in the patent is a battery, is replaced by a permanent magnet in each of the couples.

Cross-Q. 292. In the operation of an electric speaking-telephone, what practical difference does it make, if any, whether the electro-magnet coil be wound upon the end or ends of a permanent magnet, nearest the armature or diaphragm, or whether a separate electro-magnet and permanent magnet be used with the pole or poles of the permanent magnet arranged so as to come in metallic contact with the rear end of the core of the electro-magnet, or cores of the electro-magnets?

Ans. When the portion of the magnet surrounded by the coil is of soft iron, its magnetic condition responds more quickly to electric pulsations or undulations of short duration traversing the coil; hence the last-named arrangement is usually preferred.

Cross-Q. 293. But either arrangement is capable of successful practical use for speaking-telephone purposes, is it not?

Ans. I should suppose so, although I do not know that I have ever tried the arrangement first mentioned for that purpose.

Cross-Q. 294. Which of the two arrangements was contained in Drawbaugh's instrument "E," which you tested in New York, and in the corresponding instrument "D," which was not tested on account of the wire having been broken?

Ans. I understood it to be the second arrangement, that is, an iron core within the coil, which core was polarized by contact with a permanent magnet.

Cross-Q. 295. Mr. Alexander G. Bell has testified (see page 127 of complainants' record) that in March, 1875, he went to New York, where he saw Mr. Orton, and Mr. Prescott, the electrician, discussed with them his multiple telegraph invention, and made some experiments with it. Did you know anything about that interview and those experiments, and did you witness any part of them?

Ans. I did not; I think they took place before I went into the service of the Western Union Company.

Cross-Q. 296. At what time did you go into the service of the Western Union Company?

Ans. I believe it was March 15, 1875; it may, possibly, have been March 1st, but I do not think so.

Cross-Q. 297. Are you the Mr. Pope referred to in Mr. Bell's letter of May 4, 1875, page 129 of complainants' record?

Ans. I believe I am.

Cross-Q. 298. What was the subject of the correspondence between you and Mr. Bell, at and before that time, which is referred to in that letter?

Ans. I received a letter, either from Mr. Gardner G. Hubbard or else from Mr. Bell, accompanied by a letter from Mr. Hubbard—I don't recollect which—inquiring how to prepare paper for chemical or autographic telegraphic receivers, in reply to which I sent to Mr. Bell three or four different recipes for chemical preparations for that purpose.

Cross-Q. 299. Mr. Bell, in his testimony, mentioned another inter-

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view which he had at Washington, with Mr. Orton, of the Western Union Company; do you know anything about that?

Ans. Nothing whatever.

Cross-Q. 300. You have stated that in making the investigation, the results of which you reported to Mr. Orton in the fall of 1877, you had the Bell patents of March 7, 1876, and January 30, 1877, before you. In your deposition in the Dowd case you were asked, in Int. 17, as follows:

"*Int.* 17. You mentioned the fact yesterday that since the date of "your report to Mr. Orton several different transmitters, of a character "essentially different from each other, had been devised. Will you briefly "describe these, and also state in what simple ways, known to you by "experiment or otherwise, the function of throwing electrical undula- "tions upon the line may be performed?"

To which question you began your answer as follows:

"*Ans.* One of the transmitters I referred to was probably devised "before the date of my report, although not known to me till after- "wards, and consists of a diaphragm carrying a metallic conducting- "point, which vibrates in close proximity to another and fixed point, "both points being immersed in a liquid of not very high-conducting "power. The principle of this is, that the resistance of an electric "circuit, of which the conducting points and the liquid form a part, "varies with the distance between the points, and thus causes the strength "of the electric current from any constant source of electricity to vary "in exact accordance with the movements of the diaphragm when put "in motion by the impact of sound waves."

Then you go on to say, in substance, that this general type of transmitter may be constructed in an almost infinite variety of ways, of which one of the best and simplest consists in varying the current by means of discs of carbon interposed in the circuit. How was it that you did not know of these forms of transmitter until after your report to Mr. Orton, if you had the Bell patents before you prior to making your report? Did you not find any description of said apparatus, or either of them, in said patents?

Ans. I did not find in either of said patents a detailed description of the specific apparatus described in my deposition from which the extract in the question is taken. The specification of Bell's first patent, of March 7, 1876, describes several ways of causing undulations in a continuous voltaic current; and one of these ways is the basis of the principle on which the different forms of transmitters to which I alluded in said deposition are operated.

The language of the patent is as follows:

"The external resistance may also be varied. For instance, let mer-
"cury or some other liquid form part of a voltaic circuit, then the more
"deeply the conducting wire is immersed in the mercury or other liquid
"the less resistance does the liquid offer to the passage of the current.
"Hence the vibration of the conducting wire in mercury or other liquid
"included in the circuit occasions undulations in the current."

The specific devices for carrying out this principle and thereby making a speaking-telephone transmitter had not been invented, or if invented, were not known to me at the time when my report was made. I had heard that experiments were being made in which carbon was being used, but nothing whatever of the details of its application.

Cross-Q. 301. Inasmuch as you state that such transmitters were not known to you till after your report to Mr. Orton, I should infer that you did not consider the description in Bell's patent of March 7, 1876, sufficient to inform a person skilled in the art how to construct an operative telephone transmitter on that principle; am I correct?

Ans. I do not consider that the description is sufficient to enable a person skilled in the art to make, without further experiment, a practically operative speaking-telephone transmitter which produces undulations by varying the resistance outside of the battery; nor does the patentee undertake to do this. The main point of the invention is the transmission of sounds by means of peculiar electrical undulations upon a line-wire. He describes one way of doing this in such a manner that an operative apparatus may be constructed from the description; and then points out or suggests other ways in which the same results may be accomplished, without describing specific mechanism whereby the vibrations of the movable portion of the transmitter caused by external forces, are made to produce those corresponding variations in the resistance by which electrical undulations similar in form thereto are produced.

Adjourned until April 11, 1883, at 10, A. M.

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Examination resumed.

Cross-Q. 302. In your 300th answer, you quoted from Bell's 1876 patent a reference to the possibility of varying the external resistance. Is anything said in that patent about the possibility of varying the internal resistance of the battery; if so, will you quote the passage?

Ans. Yes; I quote the following passage:

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"The internal resistance of a battery is diminished by bringing the "voltaic elements nearer together, and increased by placing them fur- "ther apart. The reciprocal vibration of the elements of a battery, "therefore, occasion an undulatory action in the voltaic current."

The further statement is made that "The vertical vibrations of the "elements of a battery in the liquid in which they are immersed pro- "duces an undulatory action in the current by alternately increasing "and diminishing the power of the battery." The changes in the power of the battery here spoken of are actually due to changes in its internal resistance.

Cross-Q. 303. The phrases "external resistance" and "internal resistance" have relation to the battery, meaning resistance in the battery or outside of the battery, respectively, do they not?

Ans. Yes; that is their accepted meaning in the art.

Cross-Q. 304. Has any speaking telephone ever been constructed on the principle of varying the internal resistance, and thereby causing undulations upon the line wire, so far as you know?

[*Objected to as new matter.*]

Ans. Yes; I had one in my possession for a time, which operated on this principle.

Cross-Q. 305. When was that, who invented it, and how well did it operate?

[*Same objection.*]

Ans. I believe it was in 1878, and I understood that it was invented by Prof. A. E. Dolbear, or that it had been constructed under his direction. As nearly as I recollect, it operated quite well; I never tried it but once.

Cross-Q. 306. Do you find in Prof. Bell's 1876 patent any description of an apparatus for applying the principle of varying the internal resistance for the purposes of a speaking telephone?

Ans. There is no specific description of such an apparatus. The substance of my answer to Q. 301 applies also to this question.

Cross-Q. 307. The only apparatus which is described in said patent is that shown in Fig. 5, with its combinations in Fig. 6, and that shown in Fig. 7, is it not?

(*Objected to because the patent speaks for itself.*)

Ans. Yes; the apparatus named appears to be all that is specifically described.

Cross-Q. 308. In view of your 17th answer in the Dowd case, and your answers 300 to 307, inclusive, in this case, I judge that, notwithstanding the Bell patent of March 7, 1876, and the information therein given to the public, it still required experiment and invention to construct a practically operative speaking-telephone embodying the principle of varying the current by internal resistance, or the principle of varying the current by external resistance, in whatever form said principles might be sought to be applied. Is that your opinion?

Ans. It no doubt required experiment, at least to some extent, but I do not think it required invention to embody the apparatus in some form by which the result aimed at could be attained. There was, no doubt, abundant room for invention in using and carrying out improved forms or organizations of parts whereby improved practical results might be reached.

Cross-Q. 309. Have you ever seen a speaking-telephone constructed on the principle of varying the current by external resistance, or varying it by internal resistance, that did not, in your judgment, involve invention in addition to what is contained in said Bell patent; if so, describe the instrument?

[*Same objection.*]

Ans. I do not recollect ever to have seen such an instrument, but I have heard and read of one, and have reason to believe that it was actually constructed and successfully operated. I should not like to say that the particular transmitter mentioned by me as having been made under the direction of Professor Dolbear did not exhibit invention and adaptation, but I nevertheless think that a transmitter might be made in accordance with the suggestion contained in the patent, with reference to the vibration of the elements of the battery, which would not necessarily involve invention.

[*The statement of what the witness has heard and read of objected to by Mr. Hill, as not responsive and hearsay.*]

Cross-Q. 310. On pages 42 to 49, inclusive, in the record of the Dowd case, in the volume of exhibits, I find a copy of an application, with certain indorsements upon the papers, which application was filed in the Patent Office by Prof. A. E. Dolbear, about October 15, 1877, describing and claiming an electric speaking-telephone, and in which your name appears as attorney for the applicant; did you prepare that appli-

cation, and if so, how long before October 15, 1877, did you prepare the specification?

Ans. I think the principal part of the specification was not prepared by me, but was placed in my hands after having been prepared by another attorney. I, however, revised the specification, made some additions to it, and I think I prepared most of the claims. This was done in the latter part of August, 1877, at the time I was at work on my report to Mr. Orton, before referred to.

Cross-Q. 311. The Dowd record states that that invention was assigned to the Gold and Stock Telegraph Company, of New York city; and it appears to have been so assigned before the application was filed; do you know about what time that assignment was made?

[*Objected to as new matter.*]

Ans. Not definitely. I suppose it was made, or, at least, agreed to be made, about the time Dolbear's application for a patent was placed in my hands.

Cross-Q. 312. Was that before or after you began to make the investigation required by Mr. Orton?

[*Same objection.*]

Ans. It was after, as I recollect it.

Cross-Q. 313. You have spoken of calling Mr. Orton's attention to the Bell telephone about June, 1877; that was not the first knowledge that Mr. Orton had of the Bell telephone, was it?

Ans. So far as I knew at the time, it was; I did not know certainly whether he had ever heard of it or not.

Cross-Q. 314. I find among the complainants' evidence, page 270, that on April 7, 1877, Mr. Orton was one of the signers of a letter to Mr. Bell, asking him to exhibit the telephone in New York city, and that, on May 17, 1877, it was so exhibited, and Mr. Orton was present. It would appear from that that Mr. Orton had knowledge of it some time before you spoke to him about it; would it not?

Ans. It would seem so.

Cross-Q. 315. You have stated in answer 300, that at the time when your report to Mr. Orton was made, you had heard that experiments were being made in which carbon was being used, but nothing whatever of the details of its application; when did you first know of the details of its application?

Ans. I cannot say positively, but it must have been in January or February, 1878.

Cross-Q. 316. Who was the person who was making those experiments involving the use of carbon as a means of varying the current?

Ans. Thomas A. Edison.

Cross-Q. 317. Was he employed by anybody in that business of improving the telephone; if so, by whom?

[*Objected to as new matter.*]

Ans. I do not know.

Cross-Q. 318. What was your understanding at the time?

[*Same objection.*]

Ans. I supposed that he was at work at it on his own account, and that he was not in the employ of anybody, so far as that class of work was concerned.

Cross-Q. 319. What were his relations at the time with the Western Union Telegraph Company, the Gold and Stock Telegraph Company, and the American Speaking Telephone Company?

[*Same objection.*]

Ans. The last-named company was not then in existence. I understood that he was paid a certain salary by the Western Union Company, in the nature of a retainer, in consideration of which the Western Union Company had an option to purchase from him any invention he might make in multiple telegraphy. He was supposed to have a similar contract with the Gold and Stock Company as to type-printing telegraphs. These were matters of common report in the office; further than that I have no positive information.

Cross-Q. 320. You have somewhere in your testimony referred to the "electrodes" of a carbon telephone. To what is the term "electrode" applied in that class of instruments?

Ans. To the conductors, at the surface of which the contact takes place, by which variations in resistance are employed accordingly as the surfaces in contact have a greater or less area, or are pressed together with a greater or less degree of force.

Cross-Q. 321. What is the standard size and dimensions of the ordinary telegraph armature?

Ans. The armatures of different makers vary more or less, but the sizes are approximately as follows: Relay armatures, one and three

cation, and if so, how long before October 15, 1877, did you prepare the specification?

Ans. I think the principal part of the specification was not prepared by me, but was placed in my hands after having been prepared by another attorney. I, however, revised the specification, made some additions to it, and I think I prepared most of the claims. This was done in the latter part of August, 1877, at the time I was at work on my report to Mr. Orton, before referred to.

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Cross-Q. 321. What is the standard size and dimensions of the ordinary telegraph armature?

Ans. The armatures of different makers vary more or less, but the sizes are approximately as follows: Relay armatures, one and three

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quarter inches long, five sixteenths wide, one sixteenth thick: the armatures of sounders are more varied, but may be said to average about the same length and breadth as that of the relay, but are usually one eighth thick. Polarized relays usually have armatures about one and a quarter inches long, five sixteenths wide, and three thirty-seconds thick. These, however, vary considerably according to the use to which they are to be put. I have given the approximate size suitable for telegraphic work; that is to say, Morse signalling by the hand-key.

Cross-Q. 322. Will you state the sizes of the armatures, and the distance between the poles and armatures, in the complainants' exhibits 55 and 56?

Ans. Armatures five sixteenths wide, one thirty-second thick, and about one inch long. The present distance of the armature from the pole of the magnet, in exhibit 56, is one sixteenth scant; in exhibit 55 it is three sixty-fourths. When the instruments are placed in circuit these distances will be lessened somewhat by the yielding of the membrane under the attractive force of the magnet.

Cross-Q. 323. If the membrane yields under the attractive force of the magnet it would be practically necessary to have some means of adjusting either the tension of the membrane, or the distance between the armature and the poles of the magnet; would it not?

Ans. Not necessarily; it would be easy enough to place them in the first instance at such a distance as to allow for the yielding of the membrane, which is precisely what has been done in exhibits 55 and 56.

Cross-Q. 324. The yielding of the membrane would vary with the strength of the battery current; would it not?

Ans. Certainly.

Cross-Q. 325. And it would vary with different electro-magnets under the same current; would it not?

Ans. If the electro-magnets differed in size and construction it would, but otherwise it would not appreciably.

Cross-Q. 326. Please give the dimensions of the armature in complainants' exhibits 53 and 54?

Ans. I find the length of the armatures to be about three fourths of an inch, the breadth eleven thirty-seconds, and the thickness one thirty-second of an inch.

Cross-Q. 327. State the dimensions of the coils and the wire upon them in complainants' exhibits 53, 54, 55, and 56.

Ans. On 53 and 54 the coils are five eighths of an inch long, one

half outer diameter, and about three sixteenths inner diameter; the diameter of the wire is thirteen one-thousandths. In 53 and 54 the dimensions of the coil and the diameter of the wire appear to be the same as in exhibits 53 and 54; there is practically no difference. In giving the length of the armatures, the ends of which are of irregular form, I have, in accordance with the usual custom in such cases, given the reduced length; that is to say, what it would be if the mass of metal contained in it were made into a prism of a breadth and thickness corresponding to that of the main body of the armature. The extreme length in exhibits 53 and 54 is an inch and a quarter, and in 55 and 56 it is an inch and three sixteenths. The number of the wire is No. 28 guage.

Recess until 3, P. M.

Cross-Q. 328. In your New York and Boston tests with the reproduced Bell instruments, what batteries were used, and how many cells?

Ans. In New York I used a gravity battery and varied the number of cells; and, as nearly as I can recollect, five or six cells gave the best result. I did not notice what battery was used in Boston, and do not remember that I was told.

Cross-Q. 329. When did you first know of the actual reduction to practice and use of a speaking-telephone having the current varied by carbon?

[*Objected to as new matter.*]

Ans. I think it was in December, 1877, or January, 1878; I have no way of fixing the date very accurately by memory. It may, possibly, have been earlier than that, but I don't think so.

Redirect by Mr. Storrow, de bene:

Q. Q. 330. Did you go to Europe in the spring of 1878, and if so, when?

Ans. I did; I sailed from New York on the 27th of April, 1878.

Q. Q. 331. Had you, before you sailed, knowledge of any use of a carbon telephone on any actual lines and in any public manner; and, if so, where?

Ans. I knew of its being in use in Philadelphia before I left, and trials were also made between Philadelphia and New York of a semi-public character; that is to say, various outside parties were invited in

to witness its working. These trials were made with Edison's instruments, which were also the kind used in Philadelphia.

Q. Q. 332. Were there or were there not known in the art before March, 1876, instruments in which a wire forming one electrode was moved up and down in a vessel of water or other liquid forming part of the circuit, as a means of varying the resistance, and thereby controlling a current furnished by a constant electro-motive force; and, if so, mention some instances of such instruments, and state whether you ever saw any yourself.

Ans. Such a devise is described in the patent of Hughes, No. 14,197, of May 20, 1856, and also in the patent of House, No. 77,882, May 12, 1868. Hughes made use of this device for varying the strength of the current in the artificial line of a duplex apparatus, in order to make it correspond with that of the actual line. I saw this apparatus in New York in 1859, where it was used in actual work; and I also saw a duplex apparatus working between Boston and Portland the same year, which I understood was provided with such an attachment, although I do not remember seeing it. House made use of the device for diverting a portion of the current from an electro-magnet, and by this means was enabled to increase or diminish the force of a particular electro-magnet upon the same line. That, at least, is my recollection of it.

Q. Q. 333. What are the various sizes of wire used for winding the coils of different kinds of telegraph instruments?

Ans. For hand-worked Morse relays, Nos. 28, 30 and 32, 30 being the most common. For sounders, 22, 23 and 24. Instruments intended to work with rapidity or on very long lines are usually wound with thinner wire, such as Nos. 34 and 36. The higher the number the thinner the wire.

Q. Q. 334. Is it usual in electrical patents to specify the amount of battery, or the kind of battery to be employed, or to leave that to the discretion of the electrical engineer?

(*Objected to as immaterial.*)

Ans. It is very seldom it is so specified. The conditions under which apparatus is used in practice, vary so widely that it must necessarily be left to the judgment of the electrician or engineer.

Q. Q. 335. As I understand your position at the time when you caused to be made and tried a pair of Bell telephones, in the summer of 1879, as stated in answer 5 and elsewhere, it was for the interest of

those by whom you were employed to prove that instruments made in exact accordance with the description of Fig. 7 of the Bell patent, applying thereto a good knowledge of those arts to which the new investigation was most nearly allied, would not talk; and that it was a part of their defense in a pending suit, that they would not talk. Is that the fact, or not?

[*Objected to as leading.*]

Ans. That is the fact.

Q. Q. 336. Did you or did you not, take the precaution which your skill and experience suggested to you, to satisfy your own mind on that point, in constructing the instruments, in comparing them with the specifications and in using them in said experiment?

[*Same objection.*]

Ans. I did. I tried honestly to make them work because I felt that it was important to know the exact truth about it. I had already given my evidence in the case, and was not likely to be called on to testify further, unless I found that the apparatus could not be made to work.

Q. Q. 337. Did you, or did you not, from those experiments, become satisfied that the apparatus described in Fig. 7 of that patent was an operative apparatus, when the good skill and good-will belonging to a person skilled in the art in 1876, together with the favorable conditions of a quiet place, were brought to their construction and use?

[*Same objections.*]

Ans. I was entirely satisfied of it.

Q. Q. 338. In your present deposition, page 1290, you have stated, in substance, that what was set forth as Mr. Bell's invention, in the fifth claim of his patent, was all that was needed to be added to the preëxisting state of the art to accomplish the successful transmission of speech by electricity; that so far as you are aware no one has been able to transmit speech by electricity if any portion of the method set forth in the fifth claim as the invention of the patentee be omitted; and on page 1304 you stated, in substance, leaving out of view the Gray caveat, that you could find no method or apparatus which anticipated what was set forth in said claim. Did you, or did you not, hold that opinion in the summer of 1879?

Ans. I did.

Q. Q. 339. The defendants have put in evidence the deposition which

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you gave for the defense in the Dowd case, in 1879; and that deposition has always seemed to me very significant in view of the circumstances under which it was given. As I read it I find in it not only nothing inconsistent with the opinions which you have now stated, but I also find in it the statement that all the forms of transmitting instruments, forming parts of apparatus for the electrical production of sound, which were known to you, were vibratory circuit-breakers, and, by reason of that fact, were incapable of transmitting speech. Is that, or is that not the fact concerning the deposition?

Ans. It is the fact.

Q. Q. 340. As I read that deposition it was chiefly an attempt to exalt the work which Mr. Gray had done, and which did not amount to a speaking-telephone and was not intended as a speaking-telephone, but which, the defendants attempted to show, contained something which was used in the speaking-telephone, and therefore if patents could be obtained on it might control the use of the speaking-telephone and bring the Bell Telephone Company to terms; was that, or was that not, the main purport of your deposition?

Ans. That was essentially the purpose of my deposition; it was given in support of my opinion to the same effect, which I had previously given to my employers.

Q. Q. 341. In your cross-answer 129 and your cross-answer 143 you have stated that there was "much probability" that some portion of the principle of operation of the speaking-telephone would be found to be Gray's; what was the doubt or question that led you to express this as a doubt or "probability"?

Ans. There was at the time some uncertainty as to whether a claim or claims could be framed which would be allowed by the Patent Office, and which would be broad enough to include some portion of the method or process essential to the operation of the speaking-telephone. There was a farther uncertainty as to the question of priority of conception between Gray and Bell in respect to essential features of this method.

Q. Q. 342. Did you discover any method or apparatus made or conceived of by Mr. Gray (outside of his caveat) which was intended for or capable of transmitting speech?

Ans. I did not.

Q. Q. 343. Was or was not any apparatus made or conceived of by Gray (outside of his caveat) intended to be operated by the voice?

Ans. None that I ever heard of.

Q. Q. 344. It appears in evidence that Mr. Bell's application was sworn to January 20, 1876 and was filed February 14, 1876, and that Mr. Gray's caveat was both sworn to and filed February 14, 1876. In Mr. Gray's deposition in the Dowd case, to which reference has been made on your cross-examination, he testified in substance that he never attempted to make his caveat apparatus until after he had heard Mr. Bell's telephone at the Centennial June 25, 1876; did he not?

Ans. I so understand it.

Q. Q. 345. He also testified, in the same deposition, that the apparatus he then made, which had a somewhat different receiver from that shown in the caveat, would not talk, did he not?

Ans. I believe he did.

Q. Q. 346. During your cross-examination, some reference has been made to the defense in the Dowd case, and to the testimony of Mr. E. S. Renwick, expert witness for the defendant. He testified, as one defense, that the instruments, Fig. 7 of the first Bell patent, would not talk, did he not?

Ans. He did.

Q. Q. 347. He testified, in support of another defense, that the Bell patent of March 7, 1876, was not and did not purport to be for a speaking telephone, but was for a multiple telegraph, did he not?

Ans. He did.

Q. Q. 348. He testified, as another ground of defense, that what he called vibratory or undulatory currents of electricity of some kind, generated by magneto-induction, had been used before Mr. Bell's invention for telegraphy, though not for the transmission of speech; did he not?

Ans. He did.

Q. Q. 349. I inferred, from various indications in the testimony in that case, that the defending counsel conceived that there were certain defects in the form of the patent, which would be fatal to the suit, even if Mr. Bell were the first inventor of the speaking telephone; is that the fact?

[*Objected to as incompetent and immaterial.*]

Ans. That is the fact; at least, such was the opinion of some of the counsel.

Q. Q. 350. I infer, from a passage in your Chicago lecture of December 12, 1877, put in evidence by the defendants, and from your 171st cross-answer, that you and the defending counsel in the Dowd

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you gave for the defense in the Dowd case, in 1879; and that deposition has always seemed to me very significant in view of the circumstances under which it was given. As I read it I find in it not only nothing inconsistent with the opinions which you have now stated, but I also find in it the statement that all the forms of transmitting instruments, forming parts of apparatus for the electrical production of sound, which were known to you, were vibratory circuit-breakers, and, by reason of that fact, were incapable of transmitting speech. Is that, or is that not the fact concerning the deposition?

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suit attached considerable importance to the fact that Mr. Bell had not carried on any considerable conversation, if he had any, with the speaking telephone before the grant of his patent; is that or is it not the fact?

[*Objected to as incompetent and immaterial.*]

Ans. Yes; the counsel in the case as well as myself, had concluded from the character of the statements made in Bell's London lecture, that he had not reduced his speaking-telephone invention to practice, prior to the date of his application for a patent.

Q. Q. 351. You and Mr. George Gifford, on the part of the defense, and Mr. Chauncey Smith on the part of the Bell Company, met in August, 1879, after the testimony in the Dowd case was substantially all taken, for the purpose of ascertaining whether you could agree upon the validity, scope, and relative importance of the various patents which the respective parties owned, or which they had applied for and might expect to obtain; did they not?

[*Objected to as new matter, not referred to in the cross-examination, and as incompetent and immaterial; but this objection will be waived, if the complainants will put in all the facts concerning the settlement and combination which was afterwards effected between the said parties.*

Complainants' counsel says that he believes the subject-matter of the inquiry to be entirely immaterial and incompetent; that he has put the question de bene, because the subject was opened on the cross-examination, particularly in the 185*th cross-question and subsequent cross-questions; and, as the defendants object to the question, he withdraws it.*

Respondents' counsel says that the 185*th question and following questions related to the contract of settlement which was actually made between the parties, and not to preliminary talks between counsel.*]

Q. Q. 352. In your 141st cross-answer, you spoke of Mr. Gray's apparatus. As I understand it, from that and from your next answer, each transmitter of that apparatus was designed to operate and did operate by the alternate making and closing an electric circuit. And I understand, from your 3d answer, page 1,190, that such a mode of operation would be absolutely fatal to the production of the results designed to be attained by the apparatus, Fig. 7, of Mr. Bell's patent of March 7, 1876; is that or is that not the fact?

Ans. I believe that to be the fact.

(Adjourned until April 12, 1883, at 10, A. M.)

APRIL 12, 1883.

Examination resumed.

Q. Q. 352½. Adding to the knowledge which formed the known state of the art at the date of Mr. Bell's first patent all that Mr. Gray had done or conceived of so far as you ascertained in the examinations you made and the conferences you had with him up to the summer of 1879, outside of his caveat, including what you referred to in your cross-answers 129, 143, and 179; could one thereby transmit speech by electricity without also adding thereto all that Mr. Bell set forth as his method in his fifth claim?

Ans. No.

Q. Q. 353. In your 151st cross-answer, page 1392, speaking of Gray's circuit-breaking tuned reed transmitters, you say as part of your explanation: "This apparatus would transmit and reproduce music with all the variation of pitch and loudness." Will you state what you mean by transmission and reproduction in that sentence; and also state what control, if any, the apparatus had over the loudness of the sounds produced; and state what the capacity of the apparatus was in these respects?

(*Objected to so far as the question calls for explanation of the cross-answer, because the cross-answer referred to is clear, explicit, and does not require explanation; and the question appears to be leading and indicates an effort to change the meaning and effect of the testimony given in said answer.*

Complainants' counsel replies that it is obvious from the objection that the defendants wish to attach to a sentence capable of two inconsistent meanings that one which is at variance with the facts stated by the witness, and with the opinions expressed by the witness in other parts of his deposition and that the question is not only proper, but now appears to be called for.

Respondents' counsel says that he knows of no two meanings inconsistent or otherwise that can be attached to said sentence; and that his objection is based upon the fact that the witness having testified that said apparatus would transmit and reproduce music with all the variations of pitch and loudness, the question, by asking what control, if any, the apparatus had over the loudness, clearly indicates to the witness that the answer was not satisfactory to complainants' counsel, and intimates a desire to have it explained that all the variations aforesaid would not be transmitted and reproduced; and hence is objected to as leading and improper.

Complainants' counsel replies that the foregoing evident misunderstanding

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of the witness' answer makes it all the more important that the witness should state fully the facts about the apparatus.]

Ans. The expression "transmit and reproduce music," was, perhaps, used somewhat loosely in my answer, inasmuch as the music itself is not actually transmitted, but only the electrical vibrations by which music is produced upon the receiving instrument; that is to say, I did not mean to imply in my answer that music was first produced at the transmitting station, and that electrical effects were produced in the wire by means of such music at the transmitting station, as the use of the word "reproduce" might perhaps be thought to imply. Each reed of the transmitter is tuned to a determinate pitch, and electrical vibrations of like pitch are transmitted over the wire whenever a particular reed is set in action. If two or more reeds are simultaneously set in action, corresponding sets of electrical vibrations are thrown upon the wire, and the loudness of the combined sounds at the receiving station is greater or less in proportion as a greater or less number of coincident vibrations simultaneously occur. The transmitting apparatus exercises no control over the loudness of the sound produced by any particular reed, that being a fixed quantity determined by the power of the battery which is attached to the reed. But the variations in loudness which are caused by the superposition of one set of vibrations upon another are produced upon the receiving instrument. In other words, each separate tone manifests itself upon the receiving instrument with a loudness which does not in itself vary; but increased loudness of sound is nevertheless caused by the simultaneous existence of two or more tones; I think this explanation will render the matter clear.

Q. Q. 354. Was this ability to produce a louder resultant sound by the action of two circuit-breaking vibrators forming part of one apparatus than by the action of one of them alone, a thing known in the art before the time of Bell and Gray, or did you believe it to arise from the invention which, in your 341st answer, you said was made by Bell and by Gray?

Ans. It was not known before the date of the inventions of Bell and of Gray, so far as I have ever been able to discover. I concluded from my investigations in 1877, that the discovery or invention was originally made both by Bell and by Gray independently of each other; and my opinion remains unchanged.

[*Last part of the answer commencing with the words, "I concluded," objected to by Mr. Hill as incompetent.*]

Q. Q. 355. Did or did not, the multiple harmonic telegraph apparatus shown in Fig. 4 page 114, of Mr. Bell's deposition, and there stated by him to have been made and used by him in December, 1873, embody the invention just referred to?

Ans. It does, in so far as the production of the electrical vibrations upon the line-wire is concerned, but a separate receiver is employed for each set of vibrations, instead of one common or universal receiver.

Q. Q. 356. Then, as I understand it, the invention in question roughly stated, was that by means of a peculiar arrangement of apparatus and circuits, two transmitters simultaneously operated, would produce more violent electrical disturbances in a single line wire, than one of them alone would, and therefore produce a louder sound at the receiving station than one of them alone would. Is that about the substance of it?

Ans. That is a correct statement of what takes place.

Q. Q. 357. In your 152d cross-answer, speaking of the Bell apparatus, Fig. 6 of his patent, you speak of the electrical pulsation produced by his reeds as being always of the same amplitude for each reed. Upon what does the amplitude of the electrical disturbances depend, in the operation of that apparatus, and how important is it that that they should be always of the same amplitude?

Ans. That depends upon the amplitude of the vibration of the reed; that is, the distance through which it moves during each vibration. The actual amplitude is of no importance in multiple telegraphy, so long as the electrical vibrations produced are sufficiently powerful to actuate the receiving instrument.

Q. Q. 358. With a Gray circuit-breaking reed, what determines the amplitude of the electrical disturbances produced by the action of that reed?

Ans. The power of the battery, whose circuit is broken and closed by the reed.

Q. Q. 359. In your 3d answer, page 1288, speaking of the action of the reed of Fig. 5 of Bell's patent, (which is the same as that of Fig. 6,) you stated that the electrical undulations due to its action, in their characteristics of relative amplitude and of form, faithfully copy the corresponding characteristics in the mechanical movements of the transmitter; is that or is that not true of the electrical disturbances produced by the action of Gray's circuit-breaking reed?

Ans. It is not true of the latter. The frequency or rate of vibra-

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tion is the only characteristic of the movement of the reed which is copied in Gray's apparatus.

Q. Q. 360. In the same answer you pointed out that the capacity of the transmitter of Bell's Fig. 5, just named, enabled it to be converted into a speaking telephone, by certain structural modifications and additions. If you applied these same modifications and additions to Gray's circuit-breaking reed would you or would you not get a speaking-telephone transmitter?

Ans. I should not.

Q. Q. 361. In your 28th answer, you spoke of the rule for determining the size of armatures, and stated that the armatures of automatic telegraph instruments are made much thinner than those of hand-worked instruments. In your 321st cross-interrogatory, you were asked to state the standard size of the ordinary telegraph armature, in answer to which you stated the sizes used with hand-worked instruments. Will you give me some idea of the relation between the size of the armatures of hand-worked instruments, such as you there described, and the size of the armatures of automatic or fast-speed telegraph instruments?

Ans. The armatures of fast speed instruments are very thin, so as to possess as little weight and inertia as possible. The increase in the attractive force, due to the small mass of the armature, is compensated for as far as practicable by increasing the battery power. In the fast-speed instruments in general use, the weight of the armatures probably does not exceed one tenth of the weight of the armatures of the hand-worked instruments.

Q. Q. 362. You stated in your cross-examination, in cross-answer 215, that, as near as you could remember, in the instruments of the Bell patent, which you made in 1879, you thought that the armatures were normally parallel to the end surface of the pole and not inclined thereto. How did that happen, and of how much importance is it?

[*Last clause of the question commencing with the words "And of how much" objected to as incompetent, unless it shall appear that the witness has determined the matter by experiment.*]

Ans. That is the ordinary and workmanlike manner of arranging them. I do not think the difference in results would be very great if the armature were inclined. When the surfaces are parallel the whole mass of the armature can be placed in a stronger portion of the field without danger of contact with the magnet. The difference, however, is not important.

Q. Q. 363. Suppose, other things being equal and remaining unchanged, the armatures of the instruments 53 to 56 were lengthened at the pivot, by moving back the pivot support half an inch or an inch, what effect would that have on the result of the operation of the instruments?

[*Objected to as incompetent, unless the matter shall appear to have been determined by experiment.*]

Ans. Very little. I don't think the difference would be appreciable.

Q. Q. 364. Was the fact that lengthening an armature pivoted at one end, by moving back the pivots had no considerable effect upon the action of the instrument, one which was well known to electricians and mentioned in standard books on the subject before 1876?

[*Objected to as incompetent, speaking-telephone instruments not having been described in the books prior to* 1876.]

Ans. It was perfectly well-known to electricians, and I have seen it mentioned in works on the subject, but whether published before or after 1876 I don't remember. Upon further reflection I recollect seeing such a statement in Jenkin's Electricity & Magnetism, of which I possess a copy, purchased in 1873. Upon reference to the 1876 edition, now before me, I find the same statement, as follows: "No harm is done, however, by putting the pivots far from the points of contact, because we thereby diminish the angle through which the armature has to move between the contacts; so that if we halve the angle and double the moment of inertia the one change exactly compensates the other."

Q. Q. 365. The speaking-telephone is an invention evidently allied both to those arts which embody the science of electricity and to those which depend upon the principles of acoustics. If you searched the state of the art on those two subjects prior to March, 1876, to find a guide as to the size of membrane to be employed in the instruments Fig. 7, of Bell's patent, what apparatus would you find employing a membrane in which those two arts were concerned, and which was well-known at the date of the Bell patent?

Ans. The Reis telephone, in the different forms in which it was constructed, comprises substantially the whole state of the art prior to the date of Bell's patent so far as I am informed.

Q. Q. 366. Will you please state the size of the membrane of that form of the Reis apparatus described in the Legat article, which Legat wrote in 1863 and which you translated and published in the fall of 1877,

and the size of the membrane of the latter form described in Pisko's book published in 1865?

Ans. In the form described by Legat the diameter of the membrane was about one inch and a half; in the form described by Pisko, which I understand to be the one which was manufactured commercially and sold in considerable numbers, it was about an inch—twenty-three millimeters—if I recollect rightly.

Q. Q. 367. Please state the diameter of the membranes in complainants exhibits 53, 54, 55, and 56.

Ans. In exhibits 53 and 54 the free portion of the membrane is one and a half inches in diameter; in exhibits 55 and 56 it is almost exactly the same.

Q. Q. 368. In your 334th answer you stated that the amount of battery to be used with any particular apparatus was generally left to the judgment of the electrician who might have occasion to employ it. What rule known to electricians before the date of Bell's patent would they resort to to aid them in determining the amount of battery to be applied to the apparatus, Fig. 7, of that patent, the transmitter of which is described as a magneto machine producing by induction the currents relied on to work the apparatus?

Ans. Considering the magnet of the transmitter as a magneto-electric generator, the greatest effect would be produced when its core was brought to a condition of magnetic saturation. To bring it to this condition it was well-known that the power of the battery must be increased up to a certain point, beyond which the magnetism of the core could not be increased; and any further increase in the current would develop heat instead of magetism. Therefore, the proper rule in the present case would be to increase the current until heat began to be developed in the electro-magnets.

Q. Q. 369. In your cross answer 300 as well as in your 17th answer in the Dowd case, you appear to me to have overlooked the description of a transmitter found in the Bell patent of January 30, 1877; will you look at that patent again and state whether you find a description of a variable resistance transmitter incorporated therein by reference?

Ans. I find in said patent the following clause:

"Any instrument receiving and transmitting the impression of agitated "air may be used as a transmitter, although for convenience and for re- "ciprocal communication I prefer to use like instruments at either end "of an electrical wire. I have heretofore described and exhibited such

"other means of transmitting sound as will be seen by reference to the "Proceedings of the American Academy of Arts and Sciences, Vol. "XII."

In the volume of proceedings referred to I find a paper entitled "*Researches in Telephony, by A. Graham Bell*," in which various forms of transmitters are described, and the results of experiments made with them are reported. Among others, the following:

"A platinum wire attached to a stretched membrane completed a vol- "taic circuit by dipping into water. Upon speaking to the membrane, "articulate sounds proceeded from the telephone in the distant room. "The sounds produced by the telephone became louder when dilute sul- "phuric acid or a saturated solution of salt, was substituted for the "water. Audible effects were also produced by the vibration of plum- "bago in mercury in a solution of bichromate of potash, in salt and "water, in dilute sulphuric acid, and in pure water." (See complainants' volume of exhibits, p. 75.)

Recess until 3, P. M.

Q. Q. 370. For convenience, please to give me a reference to some well known writer who states the importance of using thin and light armatures, where rapid movements are required?

Ans. I recall one statement, at least, to that effect, which is found in the works of Count Du Moncel, and was published prior to 1876. Mr. George A. Hamilton and myself made a translation of a portion of this work, relating to the construction of electro-magnets and armatures, for the Journal of the American Electrical Society, and which was published in that journal. In this work the author states this well known law as follows: "If we require a very rapid movement of the armature, we ought to make the latter as light as possible." This translation is reprinted in *Prescott's Speaking Telephone*, etc., edition of 1879, pages 592 to 605.

Q. Q. 371. Will you look at the drawings of electro-magnets, which form part of that article and are reproduced in Mr. Prescott's book referred to, and tell me whether, in several of those drawings, the distances between the poles of the magnets and armatures are such that if the electro-magnets were enlarged to the size ordinarily used in telegraphy ten years ago, and the distances from the poles of the cores to the armatures enlarged proportionately, the latter would be near enough to the former for any practical effect to be produced. I call your attention, particularly, to Figs. 13, 14, 17, 32, 33 *bis.*, 42.

[*Objected to as immaterial.*]

Ans. In all the figures enumerated, the electro-magnets would have to be enlarged to at least four times the linear dimensions given in the drawings, to correspond with the ordinary size of actual magnets; and in such case the armature would be much too far from the poles to act with any degree of efficiency, although it is possible that some effect might be produced upon it.

Q. Q. 372. About how many to and fro motions per second are made by the armature of a hand-worked Morse instrument?

Ans. It will average from ten to fifteen, counting the movements in each direction.

Q. Q. 373. Have you ever made any experiments to ascertain whether there is any practical value in the modern form of thin air space and central opening in front of the diaphragm, such as is found, for example, in the ordinary form known as the "butter-stamp" telephone; and if so, state when and where, and with what results.

Ans. I was present and participated in certain experiments made by Mr. G. M. Phelps, at New York, in the latter part of the year 1877; we found that the thin air chamber destroyed reverberations and echoes, and sensibly improved the clearness and distinction of the articulation.

Q. Q. 374. In your direct answer 83, page 1371, you spoke of a vice of construction in the instrument "F reproduced" which, in your opinion, prevented any apparatus of which it formed the transmitting member from transmitting speech well enough to be of practical utility. You were cross-examined about this by cross-interrogations 237 and following; but that cross-examination seems to have been chiefly or entirely based on certain assumed and hypothetical conditions, and I wish to ascertain whether these conditions are present or are sought to be secured in the instrument "F reproduced" and its operation. I call your attention, first, to the 243d cross-interrogatory, and ask you whether the structure of the carbon-holding box and upper plate of said instrument are such as are there hypothetically described; and if not, how do they differ?

Ans. The structure of "F reproduced" does not correspond with the conditions contained in cross-interrogatory 243. The inner walls of the box containing the carbon powder are not cylindrical, but are conical, the inner diameter of the box diminishing somewhat from top to bottom. The upper plate resting upon the carbon powder is circular, but is not fitted accurately within the walls of the box, and therefore does not pre-

vent the powder from escaping upward between the edge of the plate and the walls.

Q. Q. 375. Will you look at the instrument "F," and having in view the extremely rough and ragged outlines of the plates and the description which Mr. Drawbaugh gives in cross-answers 1753–5, pages 1117–18, defendants' record, tell me whether in your judgment that instrument was ever constructed in conformity with the conditions hypothetically stated in the 243d cross interrogatory?

Ans. I can find no indication that such a box was ever attached to the lower plate now on instrument "F;" while the upper plate, in addition to the fact that its diameter is as great as that of the lower plate, has its edges trimmed in a rough and irregular manner, so that it would be impossible, so far as I can see, to make it fit closely to the interior of a cylindrical box. Moreover, there is a notch of considerable size cut in the edge of the upper plate to permit of the passage of the rod supporting the lower plate. It does not seem probable that that construction would have been adopted if the intention had been to absolutely prevent the escape of the fine powder upwards from the box.

Q. Q. 376. Did you see Mr. Drawbaugh rearrange the carbon powder of "F reproduced" upon any occasion during the tests in New York?

Ans. I did.

Q. Q. 377. How did he do it?

Ans. On one occasion, at least, by tapping upon the diaphragm and shaking it up, holding the instrument in his hand. On another occasion he removed the upper plate, stirred the powder with the point of his knife-blade, and afterwards leveled it off with the same implement, leaving it in the shape of a loose pile or group of piles, and then replacing the upper plate.

Q. Q. 378. Suppose you filled the cup of "F reproduced" full of the loose powder used, which is stated to have been carbon with about one sixth part of plumbago in it, made as fine as flour, and then raised up the cup against the metal plate, by means of the two adjusting screws, until you got just the right contact and pressure, what effect would lowering the surface of the carbon have on the results to be obtained from the instrument?

Ans. It would cause the transmitter to break, and thus, to a greater or less degree, destroy articulation.

Q. Q. 379. As I understand the testimony heretofore given, particu-

larly in your 86th to 89th answers, an extremely slight lowering of the lower contact surface, which you have characterized as less than the thousandth of an inch, and Mr. Benjamin as the movement of an adjusting-screw over the infinitesimal fraction of an inch, will produce this effect; is that the fact?

Ans. It is.

Q. Q. 380. Will you state whether the nature of the lower electrode, formed of the cup filled with carbon about a quarter of an inch deep, is or is not such that its upper surface will have a constant and destructive tendency to be pushed down and lowered to a destructive extent by the action of the voice on the instrument, when adjusted with such delicacy as to produce sounds loud enough to be fairly audible?

[*Objected to as leading.*]

Ans. Yes; that will be the inevitable effect of the operation of the instrument.

Q. Q. 381. Will you state whether the operation of the voice under the conditions mentioned in the preceding question will or will not, and without breaking the circuit, compact the powder, so as to bring it into the condition found in any of the carbon telephones which have ever been put to actual use, as far as you know?

Ans. It will not; the action of the diaphragm will compress the upper surface of the carbon powder to some extent, but to get it into a solid mass or cake, such as is used in the telephone transmitters referred to in the question a very great degree of pressure must be used, and it would hardly be done even then without incorporating with the powder some adhesive or binding material.

Q. Q. 382. In your 267th and following cross-interrogatories and especially your 291st cross-interrogatory you were asked in substance whether each mechanical part found in Fig. 7, of Bell's patent had a corresponding part in various of the Drawbaugh exhibits which were enumerated. But the questions were confined to the mere presence of the parts which would be named if one were to make a catalogue of the different pieces of which Fig. 7 is composed including the general position of the parts with reference to each other. And you were not asked to compare the results to be obtained by speaking into the various instruments. To make a speaking-telephone apparatus of any practical utility is it enough that it should have parts which are capable at some

times and to some extent of setting up the kind of operation described in the 5th claim of the patent; or what more, if anything is needed?

Ans. In my opinion that is not enough. It is necessary to constitute the apparatus a practically useful one, that it should operate with reasonable certainty at all times, and also that it should remain in continuous operation long enough at a time to enable intelligence to be transmitted and information to be conveyed, as, for example, by the asking and answering of questions for the purpose of transmitting information of any kind, which is practically the purpose for which the telephone is most used.

Q. Q. 383. In the 260th and 261st cross-interrogatories you were asked about the use of instrument "E" on the tell-tale line in the New York tests of the third day; do you remember whether the behavior of "E" on that occasion, and the results obtained from the line of which it was one of the instruments, were such that Mr. Marx resorted to any additional means of communication between the two rooms that had not been employed when there were two modern commercial instruments on the tell-tale line?

Ans. Yes; I remember that a messenger was employed to pass back and forth between the rooms on that occasion, and I understood the reason to be the difficulty of working through the instrument "E."

[*Last clause of the answer commencing "and I understood" objected to as an entire misapprehension on the part of the witness.*

Objection objected to by Mr. Storrow as an attempt to introduce testimony in the guise of an objection.]

Adjourned until April 13, 1883, at ten, A. M.

APRIL 13, 1883, 10, A. M.

Examination resumed.

Present, Mr. Storrow for complainants, and Mr. Hill and Mr. Jacobs for respondents.

Q. Q. 384. Will you please state any specific facts that came under your own observation bearing upon the subject of your last question and answer?

Ans. During the time that "E" was used upon the tell-tale line, frequent complaints were made of the difficulty of hearing what was spoken in it, and word was sent to speak louder into "E." The trouble appeared

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to be the faintness of the sounds rather than their indistinctness. Owing to the difficulty of understanding what was said in the instruments under test, it was inconvenient to have any trouble with the tell-tale line, and I suppose it to be for this reason that the messenger was employed.

Re-cross-examined de bene esse by Mr. Hill.

Re-cross-Q. 385. On what day, and at what time of day was it, that the messenger was employed as you have stated?

Ans. On the third day, some time in the afternoon.

Re-cross-Q. 386. How long was he employed?

Ans. I don't recollect, but I think not a great while.

Re-cross-Q. 387. What did you see him or hear him do as messenger while so employed?

Ans. He carried some messages relative to the performance of the instruments—I don't recollect what, as I did not make a note of it.

Re-cross-Q. 388. As the instrument "E" was under test while on the tell-tale line, why did you not make a note of it?

Ans. I was at the other end of the line, and what notes I made on that day related to the performance of the instruments in the room in which I was. I presume that was my reason for not particularly noting what was said and done by the messenger.

Re-cross-Q. 389. In which room were you during that time?

Ans. In the back or transmitting-room.

Re-cross-Q. 390. That was the transmitting-room of the instruments on the test-line, and the receiving-room of the instruments on the tell-tale line, was it not?

Ans. It was.

Re-cross-Q. 391. Who was the messenger?

Ans. I do not know; I only noticed that it was a boy.

Re-cross-Q. 392. Was it any of the persons whose names have been mentioned in your deposition, or in Mr. Benjamin's deposition, or in the notes, as being present on any of those days when the tests were made in New York; if so, which person?

Ans. He is not mentioned in my deposition other than on page 1344 where I find the note "A boy was here sent in to say that the instru- broke"; I don't know the boy's name, and never heard it.

Re-cross-Q. 393. That note was made on the first day, when testing "F reproduced" with a modern Bell receiver; was it not?

Ans. No, sir; the note was made on the third day.

Re-cross-Q. 394. Was it made when the instrument "E" was on the tell-tale line?

Ans. It was.

Re-cross-Q. 395. Who was at the tell-tale receiver at the time?

Ans. I think it was Mr. Ott; it may have been Mr. Smith.

Re-cross-Q. 396. Is it not the fact that when the tell-tale line was equipped entirely with Bell instruments the operator stationed at its receiving instrument had occasion quite a number of times to have sentences or words repeated, and in some instances repeated several times before he could get them fully or accurately through the Bell line?

Ans. Yes; occasional repetitions were called for, but I did not notice that any complaints were made by the operators in respect to the performance of the instruments.

Re-cross-Q. 397. When Mr. F. W. Smith was the receiving operator of the tell-tale line and no Drawbaugh instruments were on the tell-tale line, did he not on one occasion have to call for four or five repetitions of the phrase or sentence before he could get it through the tell-tale line, and did he not in that connection make a remark at the time that the instruments on the test line worked better than the Bell instruments on the tell-tale line?

Ans. I do not remember any such occurrence, but I was in the other room during a considerable portion of the time when Mr. Smith was listening at the tell-tale line.

Re-cross-Q. 398. Do not permanent magnets generally lose their magnetic power by lapse of time unless occasionally remagnetized?

Ans. Not when made of proper material, unless from some special cause.

Re-cross-Q. 399. As permanent magnets are generally made is it not a very common occurrence for them to lose their magnetism wholly or partially by lapse of time?

Ans. I can hardly answer that question categorically. Permanent magnets made by ordinary instrument makers or amateurs are very liable to do so. Parties who make a business of manufacturing them make use of a peculiar kind of steel which is very retentive of magnetism, and these are not liable to much, if any change. Permanent magnets are a commercial article, and my own experience has been that such commercial magnets are not liable to any material loss of magnetism.

Re-cross-Q. 400. What kind of steel is that referred to in your last answer as peculiar?

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Ans. The kind of steel used, has, until lately, been considered a sort of trade secret. But recent investigations have shown that steel containing a small proportion of tungsten is best adapted for the purpose; and I presume these manufacturers long ago discovered, probably by accident, some particular make of steel containing this material.

Re-cross-Q. 401. Assuming that Drawbaugh made the instrument "D" and "E" in the early part of 1875, and that he either made the permanent magnets himself or employed the village blacksmith at Eberly's Mills to make them for him, would you expect them to be made of tungsten steel, and would you not consider it highly probable that they would partially lose their magnetism in the course of seven years?

Ans. I don't think they would be likely to be made of tungsten steel, under the circumstances; and hence, it is possible that magnets so made might lose a portion of their magnetism during the length of time mentioned.

Re-cross-Q. 402. If they did lose a portion of their magnetism, then the sounds transmitted and reproduced through such instruments would be proportionally weaker and fainter, would they not?

Ans. They would be weaker, certainly.

Re-cross-Q. 403. Considering that the instruments "D" and "E" were made with wooden boxes, liable to shrink or warp by age, and had been taken apart and put together a great many times by the draftsman, the counsel, and the witnesses, in the progress of this case, and had been transported by railroads and express companies, in a trunk, with a quantity of other materials, in addition to having been handled for several years prior to the institution of this suit, would you expect their condition to be as good at the time the tests were made as when they were new?

Ans. That might, or might not, be the case. A magneto instrument will stand a great deal of rough handling without apparent injury, and its parts are very easily placed in proper relation to each other after having been displaced by rough usage. Nevertheless it is probable that the instrument would not perform as well after undergoing the vicissitudes mentioned in the question as when new.

Re-cross-Q. 404. In the 338th, 342d, and 343d re-direct questions you were asked, in substance, whether you found in Gray's inventions, outside of his caveat, any method or apparatus which anticipated what was set forth in the fifth claim of Bell's patent of March 7, 1876, or any apparatus intended for, or capable of transmitting speech, or any apparatus

intended to be operated by the voice, to which you answered in the negative. If said questions had included what was set forth in Gray's caveat, instead of excluding it, would you have answered them in the negative?

Ans. I could not have answered the question positively, either in the affirmative or the negative, if the Gray caveat had been included, for the reason that, although the method and apparatus set forth in the fifth claim of Bell's patent is also, in my opinion, substantially present in Gray's caveat, yet I had, at the date inquired about, no means of knowing whether it did, or did not anticipate the invention in the Bell patent in point of time.

Re-cross-Q. 405. You could have answered the 342d and 343d questions positively, could you not? And if yes, state what your answer would have been.

Ans. I should have answered that I had found that Gray had conceived of a method or apparatus which was intended to be operated by the voice, and which was intended to transmit speech; and that this was done prior to the summer of 1879. Whether or not the apparatus constructed would have been actually capable of transmitting speech I had no knowledge.

Re-cross-Q. 406. Please look at the "Exhibit Watson Sketch No. 1," page 313, complainants' testimony, with Mr. Watson's description of the apparatus there shown, which apparatus Mr. Watson says was made by him at the direction of Mr. Bell a few days before March 10, 1876, and, after some alterations, was successfully tested on March 10, 1876, and state whether you do, or do not, understand that apparatus to be substantially the same thing which is shown in Gray's caveat which was filed about three weeks before, which, in the meantime, Mr. Bell had been to Washington to see about.

[*Objected to as an entirely incorrect statement of the purpose of Mr. Bell's visit to Washington, and as an insinuation which has not the slightest foundation.*

Respondents' counsel says that he refers the Court to Mr. Bell's own deposition for the facts concerning that visit.

Complainants' counsel says that it was precisely because of the facts stated in Mr. Bell's deposition that the objection was made.]

Ans. It appears to be substantially similar to the transmitter illustrated and described in Gray's caveat.

Re-cross-Q. 407. In redirect question 344 you were asked in substance

whether Mr. Gray in his deposition in the Dowd case did not testify to the effect that he never attempted to make his caveat apparatus until after he had heard Mr. Bell's telephone at the Centennial, June 25, 1876. While Mr. Gray was giving that deposition in the Dowd case, and was testifying about the Centennial exhibition of the Bell telephone, and the part he took therein, during his cross-examination by Mr. Chauncey Smith, was not his testimony as follows:

"*Cross-Int.* 108. Did you yourself try the receiving instrument to "your ear?

"*Ans.* I did. The Emperor had just been using the receiving in- "strument, and as he took it down from his ear and started away to the "transmitting end, he said "to be or not to 'be.' From this I took "the cue as to what was being recited at the transmitting end. I listened "intently for some moments, hearing a very faint, ghostly, ringing sort "of a sound, but finally I thought I caught the words 'Aye, there's the "rub.' I turned to the audience repeating these words and they cheered."

"*Cross-Int.* 109. Was that the first time you had heard articulate "speech transmitted over an electric circuit?

"*Ans.* It was the nearest approximation to articulate speech that I "had ever heard."

[*Objected to as immaterial and incompetent.*]

[*Respondents' counsel says that if redirect question* 344 *calls for competent evidence, so does this question; and is proper re-cross-examination thereon.*

Complainants' counsel says that the redirect question referred to was put de bene and because reference to Mr. Gray's testimony had already been made in the cross-examination.

Respondents' counsel asks complainants' counsel to point out the reference.

Complainants' counsel states that one of the references is cross-interrogatory 136, *page* 1389.

Respondents' counsel says that that interrogatory did not refer to the Centennial Exhibition, and was put in that form merely for the purpose of bringing out the witness' knowledge of the matter then under inquiry; and, moreover, no objection was made to it.]

Ans. I believe so.

Re-cross-Q. 408. In re-direct question 346 you were asked whether Mr. E. S. Renwick, an expert witness for the defendant in the Dowd case, did not testify in that suit that the instruments, Fig. 7, of the Bell patent would not talk; to which question you gave an affirmative answer. Did not Mr. Renwick also further testify in the Dowd suit to the effect that he had made or caused to be made an apparatus constructed in exact conformity with the drawing and specification of the Bell patent of March

7, 1876, as respects the matters referred to in the 5th claim thereof, but with such additions to the apparatus as appeared to be necessary to enable it to be used practically, such additions consisting in the addition to each instrument of a bed or frame for holding the members of the instrument in their proper positions, and subsequently of the further addition of means of adjusting with nicety the relative positions of the electro-magnets and the armatures thereof, so as to adapt them to the employment of galvanic batteries of greater or less strength; and that with such apparatus he could get no articulate speech through, although repeated trials were made, but only a faint sound like "pum, pum, pum"?

Ans. Yes; that was substantially what he testified to.

Re-cross-Q. 409. What was the size of the membrane ordinarily used in the phonautograph prior to 1876?

Ans. I do not know.

Re-cross-Q. 410. In answer 7th you have spoken of the phonautograph as an instrument in which the vibrations of a membrane produced by sound waves were made to move a bristle over a surface of smoked glass through a very small range of vibration; and that the power required to effect this was inconsiderable in amount. Did you not know that the vibrations of the phonautograph membrane were known prior to 1876 to be capable of moving an instrument a great deal larger and heavier than a bristle, and of producing mechanical effects thereby?

Ans. I only know of anything of the kind by the report of certain experiments, which report was first published, so far as I am aware, since March 7, 1876, but which experiments are stated to have been made at an earlier date.

Re-cross-Q. 411. Referring to your redirect answer 369, do you mean that when you made the investigation for Mr. Orton, in the fall of 1877, with both of the Bell patents before you, and when you made your 17th answer in your deposition in the Dowd case in May, 1879, with all the additional study which you had given to the subject up to that time, you had overlooked the description of the variable resistance transmitter, so far as such description was indicated in Mr. Bell's patent of January 30, 1877?

Ans. I was perfectly well aware of the description of the variable resistance transmitter, referred to in Bell's second patent, at the time I made the report; and I do not think that I overlooked it by accident at the time I gave my testimony in the Dowd case. I did overlook it, at the moment, in my answer to the cross-question 300.

Re-cross-Q. 412. What do you mean by the expression that you don't think you overlooked it *by accident* when you gave your 17th answer in the Dowd case?

Ans. I mean that my omission to particularly mention it was probably intentional rather than accidental.

Recess until 3, P. M.

Re-cross-Q. 413. In your 373d redirect question and answer reference was made to the modern form of thin air space and central opening in front of the diaphragm; when you made your investigation in the fall of 1877, did you find that form to be then in existence; and, if so, where did you find it to have been first shown and described, and its advantages pointed out?

Ans. I do not remember that I made any investigation on this point. My recollection is not very distinct, but my impression is, that finding it described or illustrated in Bell's patent of January 30, 1877, we were trying to see whether the form of the air space made any particular difference in the operation of the instrument. I do not remember, however, much about it, except the fact that Mr. Phelps made the experiments.

Re-cross-Q. 414. Will you please point out any description of the thin air-space in said Bell patent or any statement of its advantages.

Ans. I do not find any such description or statement; it is, however, shown in Figs. 2 and 3 of the drawings.

Re-cross-Q. 415. In Bell's patent of January 30, 1877, the armature is the diaphragm itself; is it not?

Ans. It is.

Re-cross-Q. 416. Prof. Cross in his deposition in this case, in his answer 50, states that Prof. Bell has used heavy iron boiler plate as the diaphragm, and found it sufficiently responsive to transmit the voice. Would not such a diaphragm be very much heavier and more difficult to vibrate than any of the armatures used on the Drawbaugh instruments tested in New York?

Ans. Yes; if the whole mass of the diaphragm were vibrated, but I doubt if this is the case with the boiler-plate; I have never witnessed any experiment of that kind, and therefore do not know what the observed phenomena are.

Re-cross-Q. 417. You have testified that the use of powdered carbon as a low conductor or resistance in a telephone transmitter was faulty;

that, with such an arrangement, the carbon would become displaced by the action of the instrument itself, causing the instrument to break and go out of operation. In your opinion, how long would an instrument with the carbon arranged substantially as in Exhibit "Reproduced F," when once the instruments were properly adjusted, remain in proper condition for the instrument to operate effectively for the transmission of speech, and without further adjustment.

Ans. I cannot say definitely; it would depend, in the first place, upon the degree of initial pressure. The greater the pressure the longer it would continue to operate. It would depend, in the second place, upon the loudness of the speaker's voice; the louder the voice the sooner the transmitter would be put out of adjustment. Judging from the results of the New York tests, it would appear that when adjusted with a moderate degree of initial pressure the adjustment usually failed, or began to fail within a very few seconds.

Re-cross-Q. 418. You have testified that in the Gray multiple harmonic telegraph the transmitter is not operated by the voice or by music, but is operated by mechanical means. In the Reis telephone the transmitter is operated directly by the voice or the musical sound, is it not?

Ans. It is.

[*Respondents' counsel gives notice that if at the hearing he has occasion to refer to the Dolbear application referred to in the examination of this witness he shall refer to it and use the copy thereof printed in the second volume of the record of the Dowd case, on pages forty-two to forty-nine, inclusive, and which he now puts in evidence.*

Complainants' counsel inquires whether the defendants intend by this to set up Mr. Dolbear as prior to Bell in respect to any invention contained or claimed by complainants to be contained in either of the two Bell patents in suit.

Respondents' counsel replies that, as at present advised of the facts, he does not, and that he did not offer the application in evidence for that purpose.]

Re-redirect by Mr. Storrow, de bene.

Q. Q. Q. 419. You have been further cross-examined about Mr. Gray's caveat. In the Dowd case he testified, supported therein by Mr. Goodridge, that he saw a lovers' string telephone, so-called, in the streets in Milwaukee in December, 1875; that the conception set forth in his caveat came to him after seeing said lovers' telegraph, and in consequence of reflections which it gave rise to in his mind, and he named no date of con-

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ception except what could be learned from the date of his caveat; is not that the fact?

Ans. I believe it is; I so understood Gray's testimony and that of Goodridge.

Q. Q. Q. 420. In your 407th re-cross-question you were asked to state what Mr. Gray said he heard said, and what he said about what he said he heard said at the Centennial Exhibition. It also appears, from what Mr. Gray said about it in his deposition, that it was the first time he had ever listened at a telephone, and that he did not take the precaution of shutting himself up in a closet to listen, but put the instrument to his ear, in the Exhibition Building, in the presence of a large number of persons; does it not?

Ans. It so appears.

Q. Q. Q. 421. You have been cross-examined about the difficulty in hearing plainly with the tell-tale line when "E" was on it, and about the messenger boy who was employed when "E" was in use, to eke out the intercommunication then afforded by the tell-tale line in the New York tests. The instrument "E" was in the front room and the words which were to be repeated back from the listener at the testing line were spoken into "E" at the end of the tell-tale line in the front room, and listened for at the Bell receiver at the other end of the tell-tale line in the back room; was not that the fact?

[*Objected to as containing an assumption not in accordance with the facts.*]

Ans. Yes.

Q. Q. Q. 422. As I understand your testimony about it, speech was transmitted and understood over the tell-tale line so equipped, but owing to the use of "E" as one of the instruments, it was faint, and at times difficult to understand by reason of its faintness; is that the fact or not?

[*Objected to as leading.*]

Ans. Yes; I understood that to be the fact from the remarks made at the time by the receiving operator.

Q. Q. Q. 423. In the notes of the third day's performances I find the following: In the notes of Mr. Jacques, at 12.40, P. M., "Ott takes Smith's place at Bell instrument on tell-tale line." And a few minutes afterwards, in the same notes, "Ott says he hears Marx's voice in 'E' but cannot understand what is said." In the notes of Mr. Donahoe: "Tell Mr. Marx to say that again, louder;" "A boy was here sent in to

say the instrument still broke a little;" "Tell the man at the telephone to speak louder to Mr. Ott."

In the notes of Mr. Ernest Marx: "'Mr. Ott wants you to speak louder.' (Note: Mr. Ott was listening at the tell-tale line, and this was to request Mr. Marcus Marx, who was speaking through "E," at the other end of that line, to speak louder.)"

Four pages further on, in the same notes of Mr. Ernest Marx, "Tell the man at that end to speak louder to Mr. Ott." Are these some of the occurrences which you have referred to?

Ans. They are.

Q. Q. Q. 424. In your 408th re-cross-question, you were asked concerning certain additions which Mr. Renwick had made to the instruments of the Bell patent before he tested them; and, as that question cannot be material unless it should be attempted to be urged that Mr. Renwick, testifying for the defense, desired to give to those instruments, or did give to them, not merely such details of construction as the state of the art would require a workman to embody in any instrument, but also something which involved invention and departure from the specification, I will ask you to read to the examiner Mr. Renwick's 55th cross-interrogatory and answer?

Ans. It is as follows, and appears on pages 234 and 235 of the first volume of the evidence for defendant in the Dowd case:

"*Cross-Int.* 55. Are the instruments now just what you would have "had made if you had given instruction for making what is described "and represented in the patent?"

"*Ans.* I do not know whether they are or not, because I do not know "whether I should or should not have directed the details of construction "to be made in the precise manner found in those instruments. The in- "struments, however, are substantially such as I should have made if I "had given instructions myself to make what is described and repre- "sented in the patent as nearly as the meager drawing and description "and the absence of any scale or direction as to size is considered."

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me, this 13th day of April, 1883.

FRED. M. OTT,
Examiner.

FRANK L. POPE.

Adjourned until April 14, 1883, at 10, A. M.

[The foregoing deposition was suspended on April 5th, to allow the following deposition of Martin C. Herman to be taken, and was resumed at its close.]

MARTIN C. HERMAN, *being produced, sworn, and examined, saith:*

Examined by Mr. Storrow:

My age is forty-two; residence, Carlisle, Cumberland county, Penna.; I am now president judge of the 9th Judicial District of Pennsylvania, composed of the county of Cumberland; I am a lawyer by profession.

Q. 1. On the cross-examnation of William Sadler, page 1054, of complainants' record, reference was made by a question to an indictment against and trial of John C. Comfort in Cumberland county; were those two trials before you?

Ans. Yes, sir; I presume they are the two trials referred to in the testimony which you have just read.

Q. 2. What were the verdicts upon those two trials?

Ans. I should say that I suppose they are the two trials referred to, because Mr. Comfort has not been before the court on a criminal charge except in these two cases, during the period for which I have been judge, which is a little over eight years, nor do I know of his ever having been indicted previously in the county. On the first trial the jury failed to agree and were discharged; on the second trial he was acquitted by the jury and directed to pay the costs.

Q. 3. Were you satisfied that the jury were right in acquitting him?

(*Objected to as incompetent.*)

Ans. Yes, sir.

Q. 4. Should you have been satisfied with the verdict if the jury had convicted him?

[*Same objection.*]

Ans. I certainly should not have been as well satisfied, because on the evidence I expected a verdict of acquittal.

Q. 5. Abraham B. Shank, a constable of Lower Allen township, testified on behalf of the defendant, did he not?

Ans. Yes, sir.

Q. 6. If the jury fully believed the testimony of Shank they ought to have found for the defendant, ought they not?

(*Objected to as incompetent.*)

Ans. Considered in connection with the other evidence in the case,

they ought; if they believed the testimony of Shank when taken in connection with the other evidence in the case it ought to have produced that result.

Cross-examined by Mr. Hill:

Cross-Q. 7. What crime did the indictment charge against Mr. Comfort?

Ans. It charged him with conveying a farm containing, I think, sixty-eight acres to his mother, by a deed purporting to have been made on the 13th of September, 1873, but which, it was charged, was made on the 13th of September, 1879, with the intention of defrauding H. R. Mosser, a creditor.

Cross-Q. 8. Was there any charge of fraudulent alteration of the deed after it was made?

Ans. No, sir; in brief, the only charge in the indictment was that he conveyed the farm to his mother, with the intention of defrauding H. R. Mosser and other creditors, which is a misdemeanor under our statutes.

Cross-Q. 9. Did the deed that he made bear date September 13, 1873?

Ans. Yes, sir.

Cross-Q. 10. What did the evidence establish as the actual date when the deed was made?

Ans. That was the real contest in the case—as to when the deed was made. The evidence on the part of the Commonwealth, up to the close of the examination-in-chief of 'Squire Bergstresser, before whom the deed purported to have been acknowledged, showed that it was made on the 13th of September, 1879, whilst the cross-examination of Bergstresser, who was the principal witness for the Commonwealth, taken in connection with documentary evidence identified by him, and in connection also with the evidence adduced on the part of the defendant, showed that it was made, acknowledged and delivered on the date it purported to have been, to wit: the 13th of September, 1873.

Cross-Q. 11. Was all this evidence before the jury on the first trial?

Ans. No, sir; the documentary evidence identified by Bergstresser, in cross-examination, to which I particulary alluded in my last answer, was not before the first jury. It consisted of a letter written by Bergstresser, on a date in September, 1873, prior to the 13th—I think the letter bore the date of the 5th of September, 1873—and addressed to John C. Comfort, in which he stated to him, Comfort, that the deed he had requested him to prepare, was prepared and requesting him, Comfort, to call at his office at his convenience to execute it; or that he

would meet him for that purpose at any place he would name. The other document was a receipt from Bergstresser to Comfort for three dollars, for writing and acknowledging deed. This receipt was dated the 13th of September, 1873. I am not certain as to the testimony of Gardner, whether it was before the first jury or not. His testimony was important on the second trial as being corroborative of the testimony of Comfort, the defendant; there may have been some other testimony on the second trial which was not adduced on the first trial, and which I do not now recollect, but I think, I have referred to the important part.

Cross-Q. 12. Did Bergstresser testify on the second trial to the effect that on the 13th day of September, 1879, John C. Comfort did actually execute or acknowledge before him a deed of that land to his (Comfort's) mother, and did he also testify that that deed was dated back to September 13, 1873?

Ans. No, sir; he never testified that Comfort formally executed the deed made on that day, or acknowledged it excepting this, that, I think on the first trial on the subject of executing or signing the deed, my recollection is that he said he didn't remember whether Comfort wrote it or not, or whether he wrote his name. On the second trial I think he swore that Comfort wrote his own name, but there was no acknowledgment nor any pretence of a formal acknowledgment.

Cross-Q. 13. I judge from your testimony that Bergstresser testified that something was done about making or signing a deed on the 13th of September, 1879; am I correct, and if I am, will you please state what he did testify to as having been done on that day?

Ans. Yes, sir; he testified that on that day he went to Comfort's house; that after talking with Comfort socially, dining with him, going with him to the barn to look after some stock, they returned to the house and sat in a room by a table, he sitting at one side of a table and Comfort at the other; that Comfort handed him a blank form of a deed, and that he (Comfort) opened a written deed; and that Comfort told him to write as he dictated; that he wrote, Comfort dictating until he had written this deed, filling up the acknowledgment and all, and signing as a witness to the grantor's signature; that then he asked Comfort whose name he was to sign to the acknowledgment, and that Comfort replied that he should sign his own name that the copy might be known from the original. I think I have given the substance of what he said (in chief) occurred on that day. Bergstresser was not in commission at the

time, in 1879. His commission began in May of 1873 and expired in May, 1878; but the deed that he testified was made on that day, purported on its face to have been executed and acknowledged on the 13th of September, 1873, six years prior, the acknowledgment purporting to have been made before him as a justice of the peace.

Cross-Q. 14. Was that deed, which he so testified was made on the 13th of September, '79, ever recorded; and if so, do you remember when?

Ans. The deed that he testified was made on that day was not produced in evidence by the Commonwealth; the Commonwealth resting upon that point by exhibiting the record of a deed of similar purport, which was recorded sometime in November of 1879; but on cross-examination the defendant's counsel produced an old-looking deed of similar purport, which bore the recorder's certificate, showing that it was the deed that had been recorded, and asked Bergstresser whether that was the deed that was made on the 13th of September, 1879. He said it was. They then produced another deed of similar date and purport, and Bergstresser was asked whether he made that deed. On the first trial he looked that deed all over, appeared to examine it carefully, hesitated, and said it looked like his handwriting, but that he couldn't recollect anything about it. An adjournment of the trial over dinner-time or over night, I forget which, then took place, and when his examination was resumed on the resumption of the trial he testified that his recollection then was that he had made a second copy, and said positively that it also was in his handwriting.

Cross-Q. 15. Then I understand you that he testified that he made at Mr. Comfort's house, on the 13th of September, '79, the deed from Mr. Comfort's dictation, and also a copy of that deed; am I correct, and if not, please state what he did testify to as to the time of making the copy last mentioned.

Ans. He didn't say positively that he had made what he called a second copy; he said he thought he did, or his recollection was that he did; his answer on that point indicated he was not clear about it; that he thought he did, and when he was confronted with his letter and receipt dated in September, 1873, of which I have already spoken, he would not say, when questioned on the subject, that he did not make the recorded deed and take the acknowledgment on September 13, 1873, the day when it purported to have been done. His answer being, again and again, "I have no recollection of it."

Cross-Q. 16. On what principle are your juries in Pennsylvania au-

thorized to find an indicted defendant not guilty as indicted, and at the same time mulct him in the costs of the proceeding?

Ans. I suppose the best answer to that would be the statute itself, which provides, simply, that where a petit jury acquits a defendant of a misdemeanor it shall be their duty to say, as part of their verdict, whether the costs shall be paid by the prosecutor, the defendant, or the county, or whether they shall be apportioned between the prosecutor and the defendant; and in case they apportion them between the prosecutor and defendant, what proportion each shall pay.

Cross-Q. 17. Their charging the defendant with the costs is an indication that they found something wrong in his connection with the matter, even though not guilty as indicted, is it not?

Ans. It would indicate to my mind in this case that the jury believed the defendant, by his conduct or by a secrecy as to the true facts of the case, misled the prosecutor into making his information, or it might have been influenced by some other motive in the minds of the jurors which I am not able to fathom. I don't believe that on the evidence they ought to have found him guilty.

Redirect by Mr. Storrow:

Q Q. 18. Mr. Abraham B. Shank testified, in substance, that in the fall of 1873, Mrs. Comfort, the mother, told him that the farm belonged to her, and not to John; that John had conveyed it to her; at the same time showing Mr. Shank a deed, indorsed as from John C. Comfort to his mother; did he not?

Ans. Yes, sir.

Re-cross by Mr. Hill:

Re-cross-Q. 19. When did the two trials take place?

Ans. The first one took place in August or November, 1881, I think in August; and the second in January, 1882.

Examination taken, reduced to writing, and by the witness sworn and subscribed to, before me this 5th day of April, 1883.

FRED. M. OTT,
Examiner.

MARTIN C. HERMAN.

APRIL 14, 1883, 10, A. M.

Examination resumed.

CYRUS KISSINGER, being produced, sworn, and examined, saith:

Examined by Mr. Storrow:

My age is thirty years; residence, formerly Marysville, Perry county, but I now live at Steelton, Dauphin county, Pa.; occupation, railroading; I work for the Pennsylvania Steel Company, on the trains in their yard.

Q. 1. Are you the son of George W. Kissinger, whose deposition is found on page 551 of complainants' record?

Ans. Yes, sir.

Q. 2. Your father testified that he moved to Eberly's Mills in the spring of 1871, and in the spring of 1874 moved away from there to a farm, which he hired from Thomas Draper, at Marysville; did you move to Eberly's Mills with your father, and move away from there at the same time with him?

Ans. Yes, sir.

Q. 3. Your father testified that he kept store at Eberly's Mills, during the three years that he lived there; is that the fact?

Ans. Yes, sir.

Q. 4. Whom did you work for the first summer you lived at Eberly's Mills; that is, the summer of 1871?

Ans. Mr. George W. Heck.

Q. 5. Did you know Daniel Drawbaugh that summer and were you in the habit of going to his shop that summer, and if so, how often?

Ans. I was there a good bit the first summer; I knew Daniel Drawbaugh.

Q. 6. Whom did you work for, if anybody, the next winter; that is, the winter of 1871–2?

Ans. No particular person; I didn't do much, if anything; only helped to thresh once in a while.

Q. 7. Did you live at your father's that winter?

Ans. Yes, sir.

Q. 8. Did you live at your father's the first summer, while you worked at George Heck's farm?

Ans. Yes, sir.

Q. 9. It has been testified to that George Heck's farm was in Milltown, and that Drawbaugh's shop was on his farm and belonged to it; is that the fact?

Ans. I don't know whether the shop belonged to the farm or not. The farm was in Milltown.

Q. 10. How much were you in Drawbaugh's shop that winter of 1871–2, when you were living at home, and not doing much work?

Ans. I was there a good part of my time then.

Q. 11. Where did you work in the summer of 1872, the second summer you lived at Milltown?

Ans. At McCormick's stone quarry at Bridgeport.

Q. 12. Did you know Ira Kahney at that time, and did you have occasion to see much of him that summer; and if so, what occasion?

Ans. He worked with me part of the time in McCormick's quarry.

Q. 13. Where did you live that summer while you were working at the quarry?

Ans. At Eberly's Mills with my father.

Q. 14. Did you walk backward and forward to your work every day, and if so, who was in the habit of walking with you?

Ans. Yes, sir; Ira Kahney walked with me while he worked there.

Q. 15. When you quit work at the quarry in the fall, where did you go to work?

Ans. I worked out at Allison's hill, Harrisburg, for the Harrisburg Car Company, about seven days.

Q. 16. What did you do and where did you live from then on until the next spring, which would be the spring of 1873?

Ans. I didn't do anything of any account, only helped my father to thresh a day here and there; I lived with my father.

Q. 17. During the summer of 1872, when you worked in the stone quarry, how much were you in the habit of going to Drawbaugh's shop?

Ans. I didn't get there a good bit, only weeks that it would happen to be a little wet I would get down.

Q. 18. Do you mean wet so that work was stopped in the quarry?

Ans. Yes, sir.

Q. 19. How much were you in the habit of going to Drawbaugh's shop during the following winter—the winter of 1872–3?

Ans. I wasn't there as much as I was the first year.

Q. 20. Did you go there at all that winter?

Ans. Yes, sir; I was there some.

Q. 21. What were you working at in the summer of 1873; the last summer that your father lived in Milltown?

Ans. I worked on the telegraph line for the Pennsylvania Railroad Company. I worked from Harrisburg to Mifflin.

Q. 22. Where did you live that summer while you worked on the railroad company's telegraph line?

Ans. I had my home at my father's, and boarded out along the road; I didn't live at home that summer.

Q. 23. What did you do the following winter, the winter of 1873–4?

Ans. In the fall I was out at Pittsburgh for a couple of days, and then I worked at Lochiel two weeks. I also husked corn for Smyser, who lived out on the pike near Camp Hill; I don't know his first name. After that, during the winter, I didn't do anything of any account, only threshed here and there a day.

Q. 24. Where did you live during that winter?

Ans. I had my home with my father, and lived at home after I got back from Lochiel.

Q. 25. How much were you at Drawbaugh's shop that last winter that your father lived at Eberly's Mills?

Ans. I didn't get there a great deal.

Q. 26. When you would be at Drawbaugh's shop during the three years that your father lived at Eberly's Mills, did you go up and down stairs and over the shop generally, or did you confine your visits to one part of it?

[*Objected to as leading, inasmuch as the witness may not have gone over the shop generally, nor yet have confined himself to one part of it.*]

Ans. Generally when I would go there, I would go all over the shop.

Q. 27. It has appeared that Mr. Drawbaugh had a small room upstairs, at the end of the building towards the village, and which was sometimes called his office room; and that at one time he had another small room alongside of it, where he had his work-bench, and did a good part of his work. Do you remember those two rooms, and did you go into both of them?

Ans. Yes, sir.

Q. 28. As you would be in Mr. Drawbaugh's shop, from time to time, was he in the habit of letting you see various contrivances he had got up, and talking to you about them; or did he seem disposed to keep his inventions secret from you?

Ans. When you would get in the shop, if he had anything new, he would generally explain it to you.

[*Answer objected to by Mr. Hill as mere opinion, inasmuch as the witness cannot know what Mr. Drawbaugh would generally do when he had anything new, other than by mere opinion.*]

Q. 29. Will you name some of the contrivances which you saw at Mr. Drawbaugh's shop, and which you understood that he had got up?

Ans. There were two stamp-cancellers that I seen there, and a nail-cutter, a hydraulic ram, counting-machine, weather-gauge; that is about all that I seen.

Q. 30. Did you ever see a cider-press there?

Ans. Yes; I seen that, but I didn't know whether that was a patent or not—the cider-press—nearly everybody had a press.

Q. 31. What part of the shop did you see the cider-press in?

Ans. The cider-press was in the basement.

Q. 32. Did you see the stamp-cancellers and weather-gauge up-stairs or down-stairs?

Ans. I seen them up-stairs.

Q. 33. Did he ever say anything to you about making an electric clock?

Ans. No, sir; not to me in particular.

Q. 34. Did you hear him, or any one else, while you lived there, speak of his making an electric clock; and if so, what did you hear?

[*Objected to as calling for hearsay. This objection is not made against the witness testifying as to whether he ever heard anybody speaking about the electric clock, but rather against the use of any particular statement that he may have heard made to prove any specific fact or facts so stated.*]

Ans. I heard them talk there at the store that Dan was trying to get up a clock to run by electricity, that had three wheels.

Q. 35. Did you ever see at Drawbaugh's shop any talking-machine, or anything that he told you was a talking-machine, while you lived at Eberly's Mills?

Ans. No, sir.

Q. 36. Please look at the instruments now shown you marked "F", "B", "C", "C reproduced," "I", "A", "D", "E", and state whether you ever saw them or anything substantially like them at Mr. Drawbaugh's shop, while you lived at Eberly's Mills.

Ans. No, sir; I did not.

Q. 37. You know how intimate your relations were with Mr. Drawbaugh at the shop. If, while you were in the habit of going there, he had had talking-machines by which he could carry on a conversation from one place to another, or from one part of the shop to another along a wire, and had been in the habit of showing them freely to his acquaintances and visitors, allowing them to talk through them and listen at

them, do you think that he would have mentioned or showed them to you or not?

[*Objected to as hypothetical, leading, calling for mere opinion, and incompetent.*]

Ans. I think he would have showed that to me if he had had any there.

Q. 38. Mention some of the young men whom you were particularly intimate with while your father lived at Eberly's Mills.

Ans. Joe Ditlow, Abe Ditlow, Ira Kahney, George Ditlow, George Drawbaugh; that is about all.

Q. 39. It has been testified to that your father's store at Eberly's Mills was a common place of meeting for the neighbors, especially Saturday evenings; was that the fact?

Ans. Yes, sir.

Q. 40. Did you use to be in the habit of being there Saturday evenings and other evenings when you were at home?

Ans. Yes, sir.

Q. 41. Did you see Mr. Daniel Drawbaugh there at the store Saturday evenings from time to time?

Ans. Yes, sir.

Q. 42. If he had had at his shop during all the years that you lived there, and before, so remarkable a thing as a talking-machine, by which a person could talk from one place to another, along a wire by means of electricity, and a good many of the neighbors had seen it and talked through it, do you think it was a thing that would have been kept secret in the village, or do you think you would have heard of it?

[*Objected to as incompetent, leading, hypothetical, argumentative, and calling for mere opinion.*]

Ans. I think I would have heard of it, if there had been one around.

Q. 43. Did you or did you not ever, while your father lived at Eberly's Mills, from the spring of 1871 to the spring of 1874, hear that Daniel Drawbaugh had a talking-machine?

Ans. No, sir.

Q. 44. You have stated your occupations down to the spring of 1874 when your father left Eberly's Mills and moved to Marysville and you went with him. Where did you go and what did you do in the season of 1874—the first season after you moved to Marysville?

Ans. Me and Joe Ditlow, we went out to Indiana in the spring and worked on a farm there.

Q. 45. When did you come home from that trip to the west, and in what condition were you when you returned?

Ans. I left Hobart, Indiana, on the 5th of January, 1875. I got hurt in a railroad accident about eight miles west of Fort Wayne. I came home on crutches from Fort Wayne; I don't know exactly the date when I got home, but it was some time in May.

Q. 46. How much work did you do that summer, and where?

Ans. All the work I done was, I drove the reaper a couple of days for my father.

Q. 47. Did you go to Mr. Drawbaugh's shop on any errand that season; and if so, what was it?

Ans. I was down that summer—took an axle down to get a nut on it.

Q. 48. Did you get it put on, and who did it for you?

Ans. Yes, sir; I got it put on; John Drawbaugh put the nut on.

Q. 49. How long did you stay at Drawbaugh's shop on that occasion, what parts of the shop did you go into, and did you see Daniel Drawbaugh?

Ans. I got the nut put on in the lower part of the shop; I was only there long enough to get the nut on; I seen nobody but John.

Q. 50. Where did you go and what did you do in the season of 1876?

Ans. On the 20th day of March I started out to Missouri. I worked at carpentering there. I was there about five months.

Q. 51. Between the time when you moved away from Eberly's Mills, in the spring of 1874, and the time when you went to Missouri, in the spring of 1876, were you at Drawbaugh's shop on any occasion except when you went to get the axle mended in the summer of 1875?

Ans. No, sir.

Q. 52. Up to the time when you went west to Missouri, had your brother-in-law, James C. Zimmerman, and his wife lived at your father's house in Marysville?

Ans. No, sir.

Q. 53. After you came back from the West in the early fall of 1876, where did you live and work?

Ans. I lived and worked on my father's farm at Marysville.

Q. 54. Where did you live and work in 1877?

Ans. I worked at home.

Q. 55. Did you work any for the railroad in 1878; and if so, how early in the year did you begin?

Ans. Yes, sir; I commenced working on lost time in 1878; that is, taking the place of any men who happened to be absent.

Q. 56. It appears by the testimony of Mr. Jesse Wagner, page 1256, complainants' record, that during the first week in January, 1878, your brother John and your father, with his team, began to work for Jesse Wagner, grading for the coal chutes of the Northern Central Railroad, at Marysville; did you begin to work for the railroad about that time?

Ans. Yes, sir.

Q. 57. It appears from the testimony of Mr. Thomas R. Davis, auditor of the Pennsylvania Railroad, that your brother-in-law, James C. Zimmerman, worked in Beer's gang, No. 4, during that month of January, 1878, except the first five days of the month; and it appears from a certificate signed by Mr. Davis, which I hold in my hand, that your name appears on the check-roll of the same gang as working in January, 1878, on the following days: 3, 4, 5, 7, 8, 9, 10, 11, 12, 14, 21, 22, 23, 24; was that the time when you began to work for the railroad?

Ans. Yes, sir.

Q. 58. When were you married?

Ans. On the 14th day of July, 1878.

Q. 59. If you have your marriage certificate here, please produce it and read the date from it.

Ans. I produce it; it states that my marriage was on the 14th day of July, 1878.

Q. 60. Were you living at your father's when you began to work for the railroad, in January, 1878?

Ans. Yes, sir.

Q. 61. When did you last work for the railroad in that year?

Ans. In October some time; I can't tell the date when I was put off.

Q. 62. It appears from the testimony of Mr. Davis, the railroad auditor, page 1194, that in October, 1878, James C. Zimmerman was on the suspended check-roll, and that the last day he worked in that month was October 22d; and it appears from the certificate by the same Mr. Davis, which I have in my hand, that your name appears on the same suspended check-roll as having worked the following days during that month: 11, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22; was that the time when you quit working for the railroad?

Ans. Yes, sir.

Q. 63. How long after that did you live at your father's house at Marysville?

Ans. I was there a little over three weeks.

Q. 64. From the time you were married, in July, 1878, down to the time when you left your father's house, in the first half of November, 1878, where did your wife live?

Ans. She lived with her father, George W. Boyer, between Fairview and Marysville, on the river road.

Q. 65. When did you and your wife first go to housekeeping, and where?

Ans. I don't know the exact date—sometime in November, 1878, on an island owned by Philip Boyer, about a mile above Fairview.

Q. 66. Have you ever lived at your father's house since then?

Ans. No, sir.

Q. 67. At the time you quit working for the railroad, October 22, 1878, was there a ram at your father's place to throw water up from the spring to the house?

Ans. No, sir.

Q. 68. When you left your father's place in November, 1878, was there a ram in to throw water up from the spring to the house?

Ans. Yes, sir.

Q. 69. Where did that ram come from, and who brought it to your father's house?

Ans. I fetched it from Dan. Drawbaugh's shop.

Q. 70. How did it happen that you brought it over instead of your father?

Ans. Because I wanted to go over just at that time.

Q. 71. State what took place between you and your father about your going over instead of his going.

Ans. He wanted to go in the morning, or talked about going, and I asked him to let me go, and he agreed to let me go. He had other business, he said, he would attend to.

Q. 72. What team did you go over with?

Ans. I went over with my father's light spring wagon.

Q. 73. Did you stop anywhere on your way home; and if so, what for and where?

Ans. Yes, sir; I stopped on the road home. I stopped at my father-in-law's to get my horse fed.

Q. 74. Did you see your wife there at that time?

Ans. Yes, sir.

Q. 75. Was this before or after you quit working for the railroad October 22, 1878?

Ans. It was after I quit working for the railroad.

Q. 76. When you went over to Drawbaugh's shop that day did you expect to bring Drawbaugh back with you to put the ram in or not?

Ans. Yes, sir; I was to fetch Dan along if he would come.

Q. 77. Did he come with you?

Ans. No, sir.

Q. 78. Did he give you any reason for not coming; and if so, what?

Ans. All he told me—he said he had a little business; he couldn't go just then.

Q. 79. Did you make an arrangement with him as to when he was to come over to put the ram in and how he was to get over; and if so, what was it?

Ans. He told me I should tell my father to come down the road and meet him; he set a day, but I don't know what day it was any more.

Q. 80. Did you fetch over any tools or any pieces of pipe with the ram?

Ans. I fetched some tools; I don't mind of fetching any pipe along.

Q. 81. Did he soon after come over and put in the ram?

(*Objected to as leading.*)

Ans. About a week.

Q. 82. When he came over and put in the ram, did he go back the same day, or did he stay over until the next day?

Ans. He stayed until the next day.

Q. 83. Who helped to put in the ram?

Ans. Dan.; father was there, Frank, my oldest brother, and I was there myself.

Q. 84. Were James Zimmerman and his wife living in your father's house that season?

Ans. Yes, sir.

Q. 85. Who stoned up the pit around the ram after it was put in?

Ans. Jesse Wagner.

Q. 86. How soon did he do it after the ram was put in?

Ans. I don't think the ram was in over a day or so.

Q. 87. Did you help him stone up the pit?

Ans. My brother Frank tended him while he was working at it.

Q. 88. Was James Zimmerman around while they were putting in the ram and stoning up the pit, or where was he, if you know?

Ans. He was up at his grandfather's on a visit.

Q. 89. State how long he was away on that visit, and on what day of the week he got home, if you remember.

Ans. He was gone about a week; he came home on Tuesday.

(Recess until three, P. M.)

Q. 90. You told me during the recess that you wanted to correct your answer 52, in which you said that Zimmerman had not come to your father's house to live before you went west to Missouri in March, 1876; will you state what the facts are about that, and what you had to do with moving him and his family there?

Ans. I fetched a load down; that is, his wife and children; I seen I had made a mistake after I told you.

Q. 91. What time of the year was it, and how fully had you recovered from your railroad accident when you brought your sister and her children down?

Ans. It was in the fall; I could just walk without using a cane then.

Q. 92. Did Zimmerman move down at the same time that his wife did or not?

Ans. He came down with the flitting and then he went back again; he was there about a week.

Q. 93. What kind of pipe was laid from the ram up to the house?

Ans. It is all iron pipe; I don't know what size bore it is; I think it is three-quarter inch bore.

Q. 94. Was that pipe brought to the house before or after you fetched the ram from Drawbaugh's, and who brought it?

Ans. It was fetched before I fetched the ram. Jim Zimmerman fetched it from the station.

Q. 95. Where was Zimmerman working that fall of 1878?

Ans. Working on the railroad.

Q. 96. At what time would he start for his work in the morning, and at what time would he get home at night during that fall?

Ans. He generally left the house at about six o'clock to go to work; he would get back about six o'clock.

Q. 97. How soon after the ram was put in did Mr. Thomas Draper come up to your father's house?

Ans. I think he got there on Saturday night after the ram was put in.

Q. 98. Of what material was the pipe that led from the spring to the ram, or most of it?

Ans. Chestnut.

Q. 99. Did your father buy those chestnut pipes, or were they cut and bored on the farm?

Ans. He cut them on the place there and bored them.

Q. 100. Did you have anything to do with getting the auger to bore them; and if so, what?

Ans. Yes, sir; I fetched the auger from Keller's.

Q. 101. Was the boring all done at one time, or did you have the auger twice?

Ans. We only had it once that I know of.

Q. 102. Did your brother John help bore those logs?

Ans. Yes, sir; he helped to bore some of them.

Q. 103. When and where did you first see a telephone?

Ans. The first telephone I seen anything of, or heard anything of, was at Marysville. It was run from the barber shop to a store right at the railroad crossing. It was in 1878.

Q. 104. Could you, by means of it, talk or convey sound from one place to another?

Ans. That is what they said there in the store; I never talked through, it for my part.

Q. 105. What kind of a looking thing was it, and what was it made of?

Ans. It was a cigar-box they had there, and they used wrapping yarn to run from the store to the barber-shop.

Q. 106. This suit began in the fall of 1880, and in the spring and summer of 1881 the defendants were taking testimony in Harrisburg; did Mr. Drawbaugh, anywhere about those times, come to you and ask you in substance, if you knew anything about his having a talking-machine?

Ans. Yes, sir; he was after me once.

Q. 107. Where were you when he saw you and talked to you?

Ans. About a mile and a half west of Fairview, working on the N. C. railroad.

Q. 108. Did he show any of the instruments that have been shown you here this morning, and ask you whether you recognized them?

Ans. Yes, sir; he showed me some of them. I told him I didn't know of any of them that I minded seeing.

Q. 109. Has he been to see you within the last fortnight; and if so, where did he see you?

Ans. He was to see me since the first of this month, at Steelton.

Q. 110. Did he talk with you about any of the matters you have testified about to-day?

Ans. He asked me about fetching some pipe from his place after the ram was put in; I told him I didn't.

Q. 111. Did he talk with you any about the date when the ram was put in?

Ans. Yes, sir; he asked me if I was sure it was put in in 1878; I told him I was.

Cross-examined by Mr. Hill:

Cross-Q. 112. You were eighteen years old when your father moved to Eberly's Mills, were you not?

Ans. Yes, sir.

Cross-Q. 113. When did you go to Indiana to work on a farm?

Ans. Spring of 1874.

Cross-Q. 114. I see you have a memorandum book in your hand; are you giving any testimony from that?

Ans. No, sir; it has nothing to do with that.

Cross-Q. 115. At what time in the spring of 1874 did you go to Indiana?

Ans. It was in April.

Cross-Q. 116. Immediately after your father moved to the Marysville farm?

Ans. Yes, sir.

Cross-Q. 117. Whom did you work for in Indiana, and where?

Ans. I worked for a gentleman named Congdon about seven miles west of Fort Wayne.

Cross-Q. 118. Give his name in full and his post-office address.

Ans. I never heard any more than they called him Port. Congdon; his post-office address was Wheeler, Porter county.

Cross-Q. 119. Did Joe Ditlow work for the same man at the same time?

Ans. He worked a couple of days; but he was not hireling for him.

Cross-Q. 120. For whom was he hireling?

Ans. He was hired to Hiram Hardesty.

Cross-Q. 121. How far was Hardesty's place from the place where you worked?

Ans. Take the road for it, it was two miles; across the fields it was not more than a mile and a half.

Cross-Q. 122. Who else was hired on Congdon's place while you were there?

Ans. He had no one hired except me.

Cross-Q. 123. Did you ever tell any one in Indiana while you were farming there that you had seen or heard of Drawbaugh's talking-machines, or say anything about them?

Ans. No, sir.

Cross-Q. 124. When did you first hear about Drawbaugh's having made a talking-machine?

Ans. I don't mind ever hearing in particular that Drawbaugh had made one.

Cross-Q. 125. When did you first hear anything said by anybody, about any talking-machine being or have been at Drawbaugh's shop?

Ans. I never heard in particular that he had one there.

Cross-Q. 126. Never heard till to-day, that he had one there?

Ans. No, sir; I didn't hear to-day that he had one there.

Cross-Q. 127. Then when Drawbaugh came to see you in the fall of 1880 or 1881, and showed you some machines, and asked you if you had ever seen them as you testified in answers 106 to 108, he didn't tell you that he had ever had talking-machines at his shop, did he?

Ans. No, sir; he didn't tell me that he had them at the shop.

Cross-Q. 128. What did he tell you about them?

Ans. He just asked me if I ever seen any of them around over there; and I told him that I didn't.

Cross-Q. 129. What else did he tell you?

Ans. He didn't tell me anything that I mind anything of.

Cross-Q. 130. Then all the conversation he had with you, was his simply asking you if you had ever seen those machines which he showed you, was it?

Ans. Yes, sir; that was all the conversation we had.

Cross-Q. 131. He didn't tell you they were talking-machines; did he?

Ans. Oh! not in particular he didn't.

Cross-Q. 132. Did he anything in general?

Ans. Not more than he just came there and called me aside, and said, "I have got something I want to show you." Then he opened his valise and got out the machines you had here—some of them—and asked me if I ever had seen any of them.

Cross-Q. 133. When did you first know that those were talking-machines that he showed you there?

Ans. I found it out in the evening after I went home.

Cross-Q. 134. Where was your home then?

Ans. I lived in Fairview.

Cross-Q. 135. Tell us how you found it out in the evening, after you went home.

Ans. I went down to the store, and they said Drawbaugh was around hunting up the fellows about the talking-machine.

Cross-Q. 136. Who said that?

Ans. I don't know; I don't keep no diary of everybody's name.

Cross-Q. 137. If you remember that somebody told you that, and remember the time and place, why don't you remember who it was that told you, as it was not so very long ago?

[*After waiting several minutes for an answer, Mr. Hill requests the examiner to repeat the question, and asks the witness to answer it.*

Mr. Storrow asks witness if he heard the question.

Witness says he did, but did not think it necessary to answer such stuff as that.

Interrogation objected to by Mr. Storrow, as simply badgering the witness.]

Ans. I have told him two or three times; I don't see any use of my blabbing away here.

Question repeated.

[*Repetition objected to by Mr. Storrow, because the witness says he has already answered it; and further objected to as perfectly immaterial, and its repetition calculated to annoy the witness.*]

Ans. I don't know who it was told me any more.

Cross-Q. 138. At whose store was it?

Ans. Abe Hoover's.

Cross-Q. 139. Who was present?

Ans. I don't know just who was there, because I didn't know anybody hardly in Fairview at the time.

Cross-Q. 140. How long had you been living at Fairview at that time?

Ans. About two weeks.

Cross-Q. 141. When did you begin to live at Fairview, and how long did you live there?

Ans. I don't know the date when I moved there; I didn't live there quite a year, though.

Cross-Q. 142. When did you move away?

Ans. I moved to Marysville in December, 1881; I was in Baltimore when my wife moved.

Cross-Q. 143. Whose house did you live in at Fairview?

Ans. I lived in Philip Boyer's house.

Cross-Q. 144. Whom did you work for, and at what while you lived at Fairview; mention all the different persons or concerns?

Ans. I worked for a foreman named John Fiester at railroading on the eighteenth and a half division of the Northern Central railroad.

Cross-Q. 145. Did you work for anybody else while you lived there?

Ans. No, sir; not while I lived in Fairview.

Cross-Q. 146. What wages are you getting for your work for the Pennsylvania Steel Company on the trains in their yard?

Ans. We get paid altogether by the hour; we get fifteen cents an hour for braking and twenty cents an hour for conducting.

Cross-Q. 147. How many hours constitute a day's work?

Ans. We are supposed to work ten hours.

Cross-Q. 148. Do your wages average over a dollar and a half a day?

Ans. That is a little hard to get at. If you work after night you make twelve hours a day, and that would average over a dollar and a half a day. I could make forty-five dollars a month.

Cross-Q. 149. How much do you think you actually do make there at that work per month?

Ans. I ain't worked a full month there yet. I started in March, and was making pretty good time; and then I got squeezed, and I haven't been working since.

Cross-Q. 150. On what day in March did you begin work there?

Ans. I started in February; but in March I began to make pretty good time towards making a full month. I got my shoulder fractured by being squeezed between two cars; some of the bones were broken.

Adjourned until Tuesday morning, April 17, 1883, at 10, A. M.

APRIL 17, 1883, 10, A. M.

Examination resumed.

Cross-Q. 151. What day in February did you start in to work for the Pennsylvania Steel Company on their trains in the yard?

Ans. I don't know the exact day I started in.

Cross-Q. 152. Was it in the last half or first half of February?

Ans. In the first half.

Cross-Q. 153. Was it in the first week or second week in February?

Ans. In the second, I think.

Cross-Q. 154. On what day in March did you get your shoulder fractured?

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Ans. The 17th.

Cross-Q. 155. When did you move to Steelton?

Ans. I moved there the last of February, 1883.

Cross-Q. 156. Where did you move from?

Ans. I moved from Marysville.

Cross-Q. 157. When you moved to Fairview where did you move from?

Ans. I moved off of the island, about two miles from Fairview.

Cross-Q. 158. How long had you been living on the island?

Ans. As near as I can tell I lived there about two years.

Cross-Q. 159. When did you last live at your father's house?

Ans. In 1878.

Cross-Q. 160. Give the date as near as you can when you left there.

Ans. As near as I can tell it was about the 10th of November, 1878.

Cross-Q. 161. Did you leave before or after Zimmerman and his wife got back from their visit?

Ans. Right after they got back.

Cross-Q. 162. How long had there been any hydraulic ram on the Draper farm, either working or not working, before you ceased to live there in November, 1878?

Ans. I was there about a week, as near as I can get at it.

Cross-Q. 163. How long was the ram on the farm before it was put in?

Ans. Four or five days, I think.

Cross-Q. 164. How long were the excavations made for the ram and its pipes before the ram was put in?

Ans. I don't know that.

Cross-Q. 165. Give us your best recollection.

Ans. The trench was dug for the wooden pipe, and the pipe put in in the fall of 1877; and from the spring to the house not till the fall of 1878.

Cross-Q. 166. Do you mean that all the wooden pipe was put in in the fall of 1877 and all the iron pipe in the fall of 1878?

Ans. The wooden pipe was all put in in the fall of 1877, and all the iron pipe in the fall of 1878.

Cross-Q. 167. At what time were the trenches dug for the iron pipe?

Ans. I think about the last of October, 1878.

Cross-Q. 168. At what time was the trench dug for the wooden pipe?

Ans. I don't know exactly, but I think it was in December, 1877.

Cross-Q. 169. The wooden pipe extended from the spring to the ram, did it not?

Ans. Not the whole way.

Cross-Q. 170. How much of the way?

Ans. I think there was two pieces of iron pipe from the wood to the ram.

Cross-Q. 171. Is that wooden pipe in there still?

Ans. As far as I know, it is.

Cross-Q. 172. When did your father move away from that farm?

Ans. I don't know the exact time he moved away, but I think it was in the spring of 1880, or 1881; I aint sure.

Cross-Q. 173. How long was the trench dug for the wooden pipe before the wooden pipe was laid?

Ans. The trench was dug for the wooden pipe, and the pipe was put right in.

Cross-Q. 174. Who dug the trench for the wooden pipe, and who put the wooden pipe in?

Ans. My father; he dug at it and my oldest brother, Frank; and I helped; and my brother John helped to dig some at it; we all helped to put the pipe in.

Cross-Q. 175. At what time in December, 1877, was that work finished?

Ans. I don't know the date.

Cross-Q. 176. Was it finished before the holidays?

Ans. Yes, sir; I think it was.

Cross-Q. 177. How long before?

Ans. I don't know how long before it was finished.

Cross-Q. 178. Is it your recollection, that it was some weeks before the holidays?

Ans. It might have been about a week before Christmas.

Cross-Q. 179. How long did it take to dig that trench and lay those wooden pipes?

Ans. As near as I can tell, we was working off and on, about two weeks at it.

Cross-Q. 180. Did your brother John help at the beginning of the work?

Ans. No, sir.

Cross-Q. 181. How do you fix the time of that work as in December, 1877?

Ans. I take it from my brother John coming from Chicago.

Cross-Q. 182. Did your brother John come from Chicago while you were digging the trench for the wooden pipe, or after it was dug?

Ans. We had, I think, the ditch dug, and one joint put in when he come.

Cross-Q. 183. You mean the entire ditch was dug, and one joint of the pipe was laid when he came, do you?

Ans. No; it wasn't all dug; we just dug it as we put it in.

Cross-Q. 184. Which end of the ditch did you begin to dig first?

Ans. We commenced at the spring.

Cross-Q. 185. How long was that wooden pipe bored before the ditch was begun?

Ans. I don't know how long; some of it was bored about three weeks before.

Cross-Q. 186. Was that the last that was bored?

Ans. No, sir.

Cross-Q. 187. Was it the first that was bored?

Ans. I think it was.

Cross-Q. 188. Was there any wooden pipe bored after you began to dig the ditch?

Ans. Yes, sir; there was one piece I know of.

Cross-Q. 189. What part of the ditch were you at when that one piece was bored?

Ans. I think we were just about finishing up the wooden pipe

Cross-Q. 190. Do you mean just about finishing up laying the wooden pipe?

Ans. Laying and boring.

Cross-Q. 191. Who bored that one piece?

Ans. I don't know who bored it; we might have all worked a little at it.

Cross-Q. 192. When was the first pipe bored for that ram?

Ans. In December, 1877.

Cross-Q. 193. What kind of weather was it at that time—dry or wet, cold or warm?

Ans. The weather was pretty favorable just then.

Cross-Q. 194. Had there been any snow or freezing weather before the pipe began to be bored?

Ans. We might have had a few cold nights.

Cross-Q. 195. I didn't ask you what you might have had, but what you did have; what do you remember about it?

Ans. The weather was pretty cold for a couple of nights.

Cross-Q. 196. How long was that cold weather before you began to bore the pipe?

Ans. I don't know how long it was.

Cross-Q. 197. After you got the wooden pipes bored and laid, how long was it before Mr. Draper came up?

Ans. I don't have any recollection of him being up at all in the fall of 1877.

Cross-Q. 198. Well, how long after you got the wooden pipes bored and laid was it before you recollect of Mr. Draper's being up there?

Ans. Mr. Draper was up there in the fall of 1878, after the ram was in.

Cross-Q. 199. You have no recollection of his being there in the meantime, have you?

Ans. No, sir; I have not.

Cross-Q. 200. How long before the fall of 1877 was Mr. Draper up there the last time that you can remember before that fall?

Ans. I think he was there in 1876. I ain't right sure.

Cross-Q. 201. Were you living at your father's house then, at the time of Mr. Drawbaugh's visit referred to in your last answer?

Ans. I was there after corn-husking. I came home at corn-husking.

Cross-Q. 202. I mean were you at home while Mr. Draper was there on that occasion?

Ans. I don't know if I was there when Draper was there or not.

Cross-Q. 203. Then how do you know Draper was there?

Ans. I said I didn't know if he was there or not.

Cross-Q. 204. Did you ever see Draper there before the fall of 1877; and if so, when, and on how many different occasions?

Ans. I mind of him being there once, but I don't remember what year it was in.

Cross-Q. 205. How long was that after your father first rented the place?

Ans. I don't know the time.

Cross-Q. 206. What time of year was it?

Ans. It was in the fall.

Cross-Q. 207. Was it before or after your trip to Missouri?

Ans. I don't know if it was before or after.

Cross-Q. 208. Were you at home on that occasion when you remember his being there?

Ans. On what occasion?

Cross-Q. 209. You say you remember Mr. Draper being there once before the fall of 1877; I now ask you whether you were at home when he was there on that occasion?

Ans. I was at home in the fall of 1875 and the fall of 1876.

Cross-Q. 210. Were you at home when Mr. Draper was there on the occasion you refer to, which you say was before the fall of 1877? Please answer this question without any more evasion.

[*Last clause of question objected to as entirely uncalled for, because the witness has not shown the slightest disposition to evade any question, nor failed to state any fact inquired for, but on the contrary has fully stated the facts.*

Respondent's counsel says the Court can judge for itself about that after reading his answers.

Complainants' counsel says that it is then both unneccessary and improper to put such observations into the question.]

Ans. Mr. Draper was there, but I can't tell you what fall. I was home when he was there.

Cross-Q. 211. What were you doing at that time?

Ans. I wasn't doing much of anything. I was working a little on the farm there.

Cross-Q. 212. What farm work was going on at that time?

Ans. We might have been threshing, and we might have been making fence, too.

Cross-Q. 213. I didn't ask you what might have been, but what was. Do you remember what farm work was going on while Mr. Draper was there at that time?

Ans. No, sir; I don't.

Cross-Q. 214. How long was Mr. Draper there at that time?

Ans. I don't know how long.

Cross-Q. 215. Do you remember anything that happened while he was there there at that time?

Ans. No, sir; I don't.

Cross-Q. 216. Do you remember whether he and your father went down to see Mr. Drawbaugh while Draper was there at that time?

Ans. No, sir; I do not.

Cross-Q. 217. Do you remember whether he and your father went up to see the Cove Mountain coal mine while Draper was there at that time?

Ans. No, sir; I do not.

Cross-Q. 218. Did you ever know anything about their ever going up together to see that coal mine at any time?

Ans. No, sir; I don't.

Cross-Q. 219. Did you ever know anything about their ever going down together to see Drawbaugh at any time?

Ans. No, sir; I don't.

Cross-Q. 220. When Mr. Draper was there at that time, prior to the fall of 1877, did you hear any talk about putting a ram in on the farm?

Ans. No, sir; I did not.

Cross-Q. 221. When did you first hear the idea mentioned of putting a ram in on the farm?

Ans. I don't know when I first heard it.

Cross-Q. 222. Was it before you went to Missouri, or afterwards?

Ans. It was after I came back.

Cross-Q. 223. How long after you came back?

Ans. I don't know how long it was after I came back.

Cross-Q. 224. Give your best recollection, if you have any.

Ans. I ain't got no recollection how long it was after I came back.

Cross-Q. 225. When Mr. Draper made that visit prior to the fall of 1877, how long had you been back from Missouri?

[*Objected to as containing an assumption contrary to the witness' testimony.*]

Ans. I don't know how long it was after I was back.

Cross-Q. 226. Was it that same fall that you got back from Missouri?

Ans. It was after I came from Missouri I heard it.

Cross-Q. 227. I am not talking about what you heard, but about when Mr. Draper made that visit to your father's place, which you say you remember, and which you say was before the fall of 1877; what I want to know is, whether that visit took place during the same fall in which you returned from Missouri, or not?

Ans. It was after I came from Missouri.

Cross-Q. 228. Then it was in the fall of 1876, was it not?

Ans. Yes, sir; it was.

Cross-Q. 229. Did anybody come there with Mr. Draper on that occasion—any member of Mr. Draper's family?

Ans. No, sir.

Cross-Q. 230. Did any member of Mr. Draper's family ever visit your father's farm with him; if so, when?

Ans. In the fall of 1878 Mr. Draper and his daughter Jennie was up there.

Cross-Q. 231. At what time in the fall of 1878 was that?

Ans. It was in November.

Cross-Q. 232. You were in Missouri from the 20th day of March, 1876, until some time in September, 1876, were you not?

Ans. I think I was.

Cross-Q. 233. You were in your father's house from some time in May, 1875, till March 20, 1876, were you not?

Ans. Yes, sir.

Cross-Q. 234. You were absent in Indiana from the spring of 1874 till some time in May, 1875, were you not?

Ans. Yes, sir.

Cross-Q. 235. Have you any recollection of Mr. Draper's being at your father's farm during the time when you were there at home from May, 1875, till March 20, 1876?

Ans. He was there in 1876.

Cross-Q. 236. At what time in 1876;

Ans. It was after I came from Missouri; I don't know what month it was in.

Cross-Q. 237. Have you any recollection of Mr. Draper's being at your father's farm, during the time when you were there at home from May, 1875, till March 20th, 1876?

Ans. No, sir; I have not.

Cross-Q. 238. When the pipes were bored in the latter part of the fall of 1877, with whose auger were they bored?

Ans. Mr. Keller's.

Cross-Q. 239. Who got that auger from Mr. Keller?

Ans. I fetched the auger.

Cross-Q. 240. How long did you get it before the pipes were bored?

Ans. I don't know what day it was when I fetched the auger.

Cross-Q. 241. Give us your best recollection as to how long it was before the pipes were bored.

Ans. As near as I can get it, it was about three weeks, I guess, before the pipes were started.

Cross-Q. 242. Did you get the auger after your return from Missouri?

Ans. Yes, sir.

Cross-Q. 243. How long was the auger kept there at your father's place, before it was returned to Mr. Keller?

Ans. We kept it until we was done boring in December.

Cross-Q. 244. Was it then immediately returned to Mr. Keller?

Ans. I don't know.

Cross-Q. 245. Who took it back to Mr. Keller?

Ans. My father.

Cross-Q. 246. Was that auger ever at your father's place before you returned from Missouri?

Ans. Not to the best of my knowledge it wasn't.

Cross-Q. 247. How long after you returned from Missouri was it before you got that auger from Mr. Keller?

Ans. I don't know; I have no recollection at all any more.

Cross-Q. 248. Was there any pipe-boring auger at all on your father's place before you returned from Missouri?

Ans. Not that I know of.

Cross-Q. 249. Was there ever any pipe-boring auger there, except that of Keller's, while you father lived on the farm?

Ans. Not to the best of my recollection there wasn't.

Cross-Q. 250. Was that auger ever brought to your father's farm more than once?

Ans. No, sir; not that I know, there wasn't.

Recess until 3, P. M.

Cross-Q. 251. You have said that Mr. Draper and his daughter, Jennie, were at you father's house on a visit in November, 1878. How do you fix the date of their visit there as in November, 1878?

Ans. I take it from the ram that was put in.

Cross-Q. 252. How soon after the ram was put in were they there?

Ans. It wasn't more than about three days.

Cross-Q. 253. Did they come there before Zimmerman returned from his visit to his grandfather's?

Ans. Yes, sir.

Cross-Q. 254. How long did they stay?

Ans. I don't know how long they stayed.

Cross-Q. 255. Who put in the ram?

Ans. Daniel Drawbaugh.

Cross-Q. 256. How long was he there putting in the ram?

Ans. He came on Monday and, I think, he went away on Tuesday afternoon.

Cross-Q. 257. Were Draper and his daughter there when Zimmerman returned from his visit?

Ans. Yes, sir.

Cross-Q. 258. Did they stay at your father's house?

Ans. Do you mean Mr. Draper?

Cross-Q. 259. I mean Mr. Draper and his daughter.

Ans. There's where they stayed while they was there.

Cross-Q. 260. Were Mr. Draper and his wife ever staying at your father's house; if so, when?

Ans. They weren't there while we lived on the farm, not to my recollection.

Cross-Q. 261. They never visited there together while your father lived on the farm, did they?

Ans. Not so far as I know.

Cross-Q. 262. When you went to get the auger from Mr. Keller and got it, how did you go—walk or ride?

Ans. I went in a spring wagon.

Cross-Q. 263. Did you go alone, or did anybody go with you?

Ans. I went by myself.

Cross-Q. 264. Whom did you get the auger from, Mr. Keller or some of his family?

Ans. Mr. Keller and one of the boys was there when I got the auger.

Cross-Q. 265. Which one of the boys?

Ans. I don't know his first name.

Cross-Q. 266. What conversation did you have with them at the time?

Ans. All the conversation I had with him, I asked him for the auger.

Cross-Q. 267. When you went down to Drawbaugh's and got the ram, did you take it to your father's farm that same day?

Ans. Yes, sir.

Cross-Q. 268. Which was put in first—the iron pipe from the ram to the house, or the ram itself?

Ans. The iron pipe was connected with the wooden pipe, and then the ram was put in.

Cross-Q. 269. Was the iron pipe laid from the ram to the house before the ram was put in, or after?

Ans. After the ram was put in.

Cross-Q. 270. How long after the ram was put in?

Ans. It was put in the same day; it was all connected but wasn't in the trench.

Cross-Q. 271. How soon was the earth filled in over the pipe in the trench after the pipe was put in?

Ans. Some was put in the next day afterwards.

Cross-Q. 272. How soon was the job of covering up the pipe with earth finished?

Ans. I don't know.

Cross-Q. 273. Give me your best recollection.

Ans. I don't have no recollection when it was finished.

Cross-Q. 274. Was the pipe all covered over with earth that winter before the cold weather set in?

Ans. It wasn't covered the first night, because two joints busted.

Cross-Q. 275. Are you sure there were two joints bursted the first night?

Ans. Yes, sir; I am.

Cross-Q. 276. What do you mean by two joints?

Ans. I mean two lengths of the pipe.

Cross-Q. 277. In what part of the pipe were those two lengths that bursted?

Ans. Up pretty near the house.

Cross-Q. 278. Was one of them the curved end of the pipe that stands up out of the ground and discharges the water?

Ans. It wasn't at the time, for it didn't have any curve then.

Cross-Q. 279. Was it the end piece of the pipe that discharges the water?

Ans. It was the end piece at the time we were putting it in.

Cross-Q. 280. I mean was it the end piece which discharges the water that froze and was bursted on that first night?

Ans. Yes, sir.

Cross-Q. 281. And was the other piece which froze and was bursted the section or joint next to that?

Ans. Yes, sir; it was.

Cross-Q. 282. At that time the end piece which stands up out of the ground and discharges the water was not curved, but straight, if I understand you; am I correct?

Ans. No, sir; the middle of it sagged down. There was a hollow in the ground where it sagged to. That held the water, and it bursted.

Cross-Q. 283. Was it in the trench or on top of the ground?

Ans. On top of the ground.

Cross-Q. 284. When was that part of it covered up with earth?

Ans. I don't know when it was covered up.

Cross-Q. 285. When was the curved end piece put on to discharge the water?

Ans. It was put on Tuesday.

Cross-Q. 286. Did the pipe burst Monday night or Tuesday night?

Ans. It bursted on Monday night.

Cross-Q. 287. Do you know who mended the bursted pipe?

Ans. No, sir; I don't.

Cross-Q. 288. Was the iron pipe brought there at the time the ram was put in or before?

Ans. I don't know. I didn't fetch the pipe from the station. I couldn't tell when it was fetched.

Cross-Q. 289. Do you know who cut the logs that were used for the wooden pipe, and where they were cut?

Ans. They was cut on the farm there. My father and my brother Frank cut them.

Cross-Q. 290. Were you at home when they were cut?

Ans. Yes, sir; I lived at home then.

Cross-Q. 291. When were they cut?

Ans. They were cut in the fall of 1877.

Cross-Q. 292. Are you sure about that?

Ans. Yes, sir; I am.

Cross-Q. 293. How large were those logs?

Ans. I don't know. I never measured them.

Cross-Q. 294. Give your best recollection.

Ans. I don't have any recollection about it.

Cross-Q. 295. You say you helped bore them and lay them. Can't you recollect anything about their size?

Ans. No, sir; I don't go by guess-work.

Cross-Q. 296. Where were those logs kept from the time they were cut till the time they were put into the ground?

Ans. They were laying over by the barn.

Cross-Q. 297. On which side of the barn, and how near to it?

Ans. They were on the east side of the barn—the side towards the river—about thirty yards from the barn.

Cross-Q. 298. Is that where they were when the boring was going on?

Ans. Yes, sir.

Cross-Q. 299. They were all bored at that place, were they?

Ans. Yes, sir.

Cross-Q. 300. How long were they cut and gotten to that place before they were bored?

Ans. I don't know how long they was fetched there before they was bored.

Cross-Q. 301. Give your best recollection.

Ans. I don't have any recollection about it.

Cross-Q. 302. Were they bored and put into the ground while green, or were they dried first?

Ans. They was bored and put into the ground while they was green.

Cross-Q. 303. Were they lying there near the barn three months before they were put into the ground?

Ans. I have no recollection how long they was laying there.

Cross-Q. 304. Were they cut and brought near the barn before or after you returned from Missouri?

Ans. After I come from Missouri.

Cross-Q. 305. How long after?

Ans. They was cut in the fall of 1877.

Cross-Q. 306. What time in the fall of 1877?

Ans. I repeated once before that I didn't know the time.

Cross-Q. 307. How do you know they were cut in the fall of 1877?

Ans. I know they was cut the fall my brother came from Chicago; that is the way I know it.

Cross-Q. 308. How long were they cut before your brother came from Chicago?

Ans. I don't know how long they was cut.

Corss-Q. 309. If you don't know how long they were cut before your brother came from Chicago, how do you know they were cut in the fall before your brother came from Chicago?

Ans. I know they wasn't cut in harvest.

Cross-Q. 310. You are sure that no logs were cut and bored for pipes there at that farm before the end of the harvest of 1877; are you?

Ans. Yes, sir; I am.

Cross-Q. 311. What do you call the end of the harvest; about what time is it?

Ans. We generally get done harvesting in August—the oats harvest.

Cross-Q. 312. Fix the time, as near as you can, when you returned from Missouri.

Ans. It was the last of August or first of September I came from Missouri.

Cross-Q. 313. Were were you and what were you doing that spring and summer in Missouri?

Ans. I was at Castle Rock, Osage county, Missouri, working at the carpentering trade.

Cross-Q. 314. For whom were you working?

Ans. I was working for a man named John Kapp.

Cross-Q. 315. How long did you work for him?

Ans. I worked for him from the time I got out; me and him went out together.

Cross-Q. 316. Where is he now?

Ans. I don't know where he is now.

Cross-Q. 317. Did you leave him there when you came away?

Ans. Yes, sir.

Cross-Q. 318. Where did he live before you went out there?

Ans. He lived in Marysville.

Cross-Q. 319. Did anybody else go out there with you and him?

Ans. His wife and child.

Cross-Q. 320. What jobs did you work on out there in Missouri for him?

Ans. I worked on several jobs—put roofs on a couple of houses, and put up a hog-shed.

Cross-Q. 321. Whose houses and whose hog-shed and in what place?

Ans. I don't know the men's names now no more. The place was Castle Rock.

Cross-Q. 322. In what year did you work in Lochiel two weeks?

Ans. I worked there in 1873.

Cross-Q. 323. What time in 1873?

Ans. It was growing towards fall when I worked there.

Cross-Q. 324. About what month was it?

Ans. I don't know what month it was.

Cross-Q. 325. Was it after harvest or before?

Ans. The fall don't generally come before harvest.

Cross-Q. 326. How long after harvest was it, to the best of your recollection?

Ans. The weather was getting a little cool.

Cross-Q. 327. What were you doing in Lochiel?

Ans. I was helping on a puddling furnace.

Cross-Q. 328. At whose furnace, and on whose gang?

Ans. I worked one week on No. 8, and the other week on No. 3; the boss puddler was Mike Sullivan; I don't know who owned it.

Cross-Q. 329. Do you know what the name of the furnace was?

Ans. The name of the rolling mill was the Lochiel Rolling Mill.

Cross-Q. 330. How many times were you ever at Drawbaugh's shop, after your father moved to Marysville?

Ans. To my recollection I was only there twice—in 1878 once, and once in 1875.

Cross-Q. 331. Were you in the upper story of the shop, on either of those two visits?

Ans. On the visit in 1875, I wasn't; in 1878 I was in the upper part of the shop.

Cross-Q. 332. When was the last time that you were in Drawbaugh's shop, that you can remember, before your visit there in 1875?

Ans. After we moved away I wasn't in it till 1875.

Cross-Q. 333. When was the last time that you can remember being there, before your father moved away from Eberly's Mills?

Ans. I was in during the winter, but I don't know what date, nor nothing else it was.

Cross-Q. 334. Were you in more than once during the winter?

Ans. Yes, sir, I was.

Cross-Q. 335. Did you see any electric clocks there at that time; if so, how many?

Ans. I seen none that I know of.

Cross-Q. 336. Did you ever see any electric clocks there?

Ans. I seen a clock there in 1878 when I went over.

Cross-Q. 337. Did you ever see any electric clock there before 1878?

Ans. Not to the best of my knowledge I didn't.

(Adjourned until April 18, 1883, at 10, A. M.)

APRIL 18, 1883, 10, A. M.

Examination resumed.

Cross-Q. 338. Did Mr. Draper ever get any horses from your father, while your father lived on the farm at Marysville?

Ans. Yes, sir.

Cross-Q. 339. How many in all?

Ans. Only two to my recollection.

Cross-Q. 340. Describe those two horses.

Ans. They were both bays; one was a horse, and the other, I think, was a mare; the mare, I think, was a two year old, and the horse, the one he got last—was a three year old.

Cross-Q. 341. Did he take those horses on account of the rent of the farm?

Ans. I don't know.

Cross-Q. 342. When did Mr. Draper get those horses?

Ans. The bay mare—I don't know when he bought her; and the bay horse he bought just before my father moved to Easton.

Cross-Q. 343. Did he get the bay horse in 1879 or 1880?

Ans. I don't know what year it was.

Cross-Q. 344. Do you know when your father moved to Easton?

Ans. No, sir; I don't know what year it was.

Cross-Q. 345. Your father testified that it was about the 1st of April, 1880; assuming that to be the date, did Mr. Draper get that bay horse that spring; or did he get it the summer or fall previous?

Ans. He got in the spring of 1880 just before my father's sale was—the first one.

Cross-Q. 346. Did he get the bay mare the first year before that, which would be 1879, or the second year, which would be 1878, or before that?

Ans. I have no recollection when he bought the bay mare.

Cross-Q. 347. Where were you living when he bought the bay mare?

Ans. I have no recollection if I was at home or where I was.

Cross-Q. 348. Did he get the bay mare before or after your marriage?

Ans. I have no recollection when he got the bay mare.

Cross-Q. 349. You have testified that you lived at your father's house up to about November 10, 1878; don't you know whether the bay mare remained on the farm up to that time or not?

Ans. No, sir; I have no recollection.

Cross-Q. 350. Who took the bay mare away when Mr. Draper bought her?

Ans. I have no recollection who took her.

Cross-Q. 351. How do you know that Mr. Draper ever got a bay mare from your father, if you know so little, as you say?

Ans. I just got it from my father—what my father told me.

Cross-Q. 352. Did your father tell you right away after Draper got the bay mare?

Ans. I don't know that.

Cross-Q. 353. When did your father tell you about it?

Ans. I don't know; I didn't mark the date.

Cross-Q. 354. How happened you and your father to be talking about the thing?

Ans. I just happened to come home, and asked him where the bay mare was.

Cross-Q. 355. Was that while you were living on Boyer's Island?

Ans. I said once before, I had no recollection what year it was, nor nothing else.

Cross-Q. 356. Can you tell whether it was before or after the ram was put in, that Draper took the bay mare?

Ans. No, sir; I can't.

Cross-Q. 357. After the ram was put in, was the stock watered from the ram, or was the water used only for household purposes?

Ans. No, sir; the stock got their water at the spring where they always did.

Cross-Q. 358. Before the ram was put in, was the water that was used in the house all obtained from the spring?

Ans. Yes, sir.

Cross-Q. 359. Who used generally to carry it from the spring to the house?

Ans. The women generally carried the water.

Cross-Q. 360. Were there any hired women in your father's house while he lived on the farm?

Ans. No, sir; there was no hired women around when I was there.

Cross-Q. 361. When the ram was put in was the spring covered up, or did it still remain open?

Ans. It remained open.

Cross-Q. 362. Do you remember the building of an observatory and a porch at the house on the farm?

Ans. I mind them working at it; I don't know what year it was in, though.

Cross-Q. 363. Was it before or after the ram was put in?

Ans. It was before the ram was put in.

Cross-Q. 364. Was it before or after the wooden logs were gotten out and brought down to the spot near the barn?

Ans. To my best recollection it was before.

Cross-Q. 365. Is there any circumstance connected with the observatory and the ram or spring, which enables you to remember that the observatory was built before the ram was put in; if so, what?

Ans. I take it from the time the lumber was fetched.

Cross-Q. 366. When was the lumber fetched?

Ans. I don't know what date, but the weather was warm yet when we fetched it over the river.

Cross-Q. 367. Who fetched it over the river?

Ans. Me and Bill Taylor.

Cross-Q. 368. Where did you get that lumber?

Ans. We got it at Dr. Heck's saw-mill, across the river from Marysville, about a mile above Rockville.

Cross-Q. 369. Did your father ever get any other lumber there that you know of?

Ans. Not that I know of, he didn't.

Cross-Q. 370. Was the observatory built right away after you got that lumber?

Ans. I think the portico was built first.

Cross-Q. 371. Was the portico built right away after you got the lumber?

Ans. I think Mr. Taylor started the next day on it, if I ain't mistaken.

Cross-Q. 372. Who built the portico and who built the observatory; that is, who did the work on them and who managed the job?

Ans. Mr. William Taylor done the work and managed the job. He lived in Marysville at that time. I don't know where he lives now, but think he lives in Ohio, if I am not mistaken.

Cross-Q. 373. On what side of the house was that portico built?

Ans. On the south side.

Cross-Q. 374. Was there any portico there before?

Ans. No, sir; there was never no portico there; there was a kind of a porch there.

Cross-Q. 375. Was the porch taken away to make room for the portico?

Ans. A part of it; the floor was taken off, but the sills were used for the portico, if I am not mistaken.

Cross-Q. 376. Describe the porch and describe the portico, and tell us the difference between them in construction and appearance.

Ans. The porch was nothing but a floor nailed on the sills and had no roof over it. The portico had a tinned roof supported on posts and pillars—I don't know how many—and had bannisters around it.

Cross-Q. 377. How long after the portico was finished was it before the observatory was begun?

Ans. I don't know exactly, but I think it was started right after.

Cross-Q. 378. How long did it take to build the observatory?

Ans. I don't know; I didn't keep no time how long they was working at it.

Cross-Q. 379. Give us your best recollection about it.

Ans. I don't have no recollection about it.

Cross-Q. 380. Haven't you any idea whether it took a week, or a month, or three months, or more?

Ans. I don't know how long it took.

Cross-Q. 381. Is that the best answer you can give to my last question?

Ans. It is, the way you placed it.

Cross-Q. 382. Then I will place it this way. Give us your best recollection, judgment, or belief, as to how long the work on that observatory was going on before it was finished.

(*Complainants' counsel objects to the question as immaterial and incompetent; and expresses the hope that if the defendants wish to fix dates and lay them before the court, they will do so otherwise than by the prolonged cross-examination of a witness who testifies that his recollection touching those so inquired for is not sufficient to be of value.*)

Ans. I don't know if it was finished when I left home or not.

Cross-Q. 383. Was the inside of the observatory lathed and plastered, or had it only a wooden finish?

Ans. It only had a wooden finish while I was at home.

Cross-Q. 384. The observatory was on the top of the house, was it not?

Ans. It was, while we lived there.

Cross-Q. 385. What were the means for getting up into it—a ladder or a stairway?

Ans. From the garret there was a ladder run up.

Cross-Q. 386. What use was made of the observatory?

Ans. No use at all, that I know of.

Cross-Q. 387. You testified that Mr. Drawbaugh helped to put in the ram; did you ever see him there afterwards?

Ans. No, sir; I didn't—not after the ram was finished.

Cross-Q. 388. You testified that you brought the ram over from Mr. Drawbaugh's shop; did you bring any iron pipe along with it?

Ans. No, sir.

Cross-Q. 389. Did you ever go down to his shop to get any iron pipe?

Ans. Not that I know of, I didn't.

Cross-Q. 390. Did the pipe of the ram ever burst at any other time except the first night after it was put on?

Ans. All I ever knowed of its bursting.

Cross-Q. 391. You have talked this case over a good deal at different times with your brothers, John and George, your brother-in-law, Zimmerman, and your father, have you not?

Ans. I have never seen my father since this case has been going on that I know of; I have talked very little to my brothers about it, or my brother-in-law either.

Cross-Q. 392–3. How many times have you talked with Zimmerman about your recollection as to the date of putting in the ram, and the other matters connected therewith?

Ans. I have talked with him several times.

Cross-Q. 394. When for the first time, and when for the last time?

Ans. I don't know what month the first time I talked with him was in; the last time was in March or April, 1883.

Cross-Q. 395. How many times have you talked about said matters with your two brothers, or either of them?

Ans. I only mind of talking once with John; Frank I have talked with oftener than that, because he has got his home with me now.

Cross-Q. 396. How long has George Frank been making his home with you?

Ans. He came to my house the last of August, 1882, I think, and has made his home with me ever since.

Cross-Q. 397. Have you lived with your brother-in-law, Zimmerman, at any time recently; and if so, when and how long?

Ans. No, sir; I have never lived with him, not as I know of.

Cross-Q. 398. Did you not stay at Zimmerman's house a short time before you moved to Steelton?

Ans. I might have been there a couple of hours.

Cross-Q. 399. Did you have your furniture and household stuff at

Zimmerman's house, or have your family there, a short time before you moved to Steelton?

Ans. My furniture was there in a room; yes.

Cross-Q. 400. How long was your furniture there, and when?

Ans. I don't know exactly how long it was there—only a short time, though. I don't know what date it was I put it there, and I don't know what date it was I took it away.

Cross-Q. 401. Was it in January or February, 1883?

Ans. I took it to Steelton in February.

[*Question repeated.*]

Ans. I took it to Steelton in February, 1883.

Cross-Q. 402. I think you know what my question is, and I wish you would answer it.

Ans. I have answered it all I am going to answer it.

Cross-Q. 403. Do you refuse to give me an answer to the question; if so, will you give your reason for refusing?

[*Complainants' counsel objects to this kind of interrogation as to matters perfectly immaterial, incompetent, and calculated simply to weary, annoy, and irritate the witness.*

Respondents' counsel says that the question is not immaterial; is not of a nature to badger or annoy the witness, and was not intended for any such purpose.]

Ans. I have answered that question twice; I said I took it away from there in February, 1883, when I took it to Steelton.

Cross-Q. 404. How long had it been at Zimmerman's house when you took it away from there to move it to Steelton?

Ans. I don't know just exactly how long it was there.

Cross-Q. 405. Was it there a week, two weeks, a month, or more?

Ans. I don't know exactly how long it was there; I guess it was there about a month; maybe not quite that long; maybe a little more; I don't know.

Cross-Q. 406. Where was it taken from when it was taken to Zimmerman's house?

Ans. It was taken from Marysville—Dr. Traver's house.

Cross-Q. 407. Who took the furniture from Dr. Traver's house to Mr. Zimmerman's house?

Ans. Daddy Jobson done the hauling—that is what he is called; I don't know his first name.

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Cross-Q. 408. While your furniture was in Mr. Zimmerman's house where did your family stay?

Ans. They stayed down at her father's.

Cross-Q. 409. What were you doing during that time?

Ans. I wasn't doing anything more than running around.

Cross-Q. 410. You went to work for the Pennsylvania Steel Company, in February, 1883; whom did you work for last before you went to work for that company, and when was it?

Ans. I worked for Al. Seidel & Bro. I don't know the date I quit there.

Cross-Q. 411. State as near as you can when you quit work there.

Ans. I don't want to guess at it and I don't know when it was, that is the right date.

Cross-Q. 412. Can you tell me in what month it was that you quit there?

Ans. I ain't right sure, but I think it was in December, 1882; I don't know what time of the month it was, though.

Cross-Q. 413. About how long did you work for Al. Seidel & Bro.?

Ans. I don't know exactly how long I worked for them.

Cross-Q. 414. I didn't ask you to state exactly, but to state about how long; please to do so.

Ans. As near as I can tell it was about four months, I guess—between three and a half and four; it might have been a little more.

Cross-Q. 415. What business does that firm carry on, and where?

Ans. They run a forge at Marysville.

Cross-Q. 416. What wages did they pay you for the work you did for them?

Ans. They paid me a dollar and ten cents a day of ten hours.

Cross-Q. 417. What were you doing in June, July, and August, 1882, and where were you during that time?

Ans. June and July and part of August I worked at Rockville for Smith, contractor, on part of the bridge; Ed. Smith was the name of one of the boys; I don't know the father's name.

Cross-Q. 418. What wages did you get for that work?

Ans. I got fifteen cents an hour, or a dollar and a half for ten hours.

Cross-Q. 419. Have you been at Chicago within the last year or two; if so, when and how long?

Ans. Yes, sir; I was out there. I got home in January, 1883. I

don't know what day it was. I don't think I was there over twelve or fifteen days: it might have been a little more.

Cross-Q. 420. Did you stay with your brother John while you were in Chicago?

Ans. No; I had a room by myself.

Cross-Q. 421. Were you visiting him?

Ans. No; I didn't call it a visit. I went to hunt a job.

Cross-Q. 422. Did you stay in the same house with him?

Ans. I did for two or three nights.

Cross-Q. 423. What business was he engaged in?

Ans. When I was there he was driving hack for Wright's livery stable.

Cross-Q. 424. Did he tell you what wages he was getting?

Ans. He told me he was getting twelve dollars a week.

(Recess until 3, P. M.)

Cross-Q. 425. When did anybody first speak to you on behalf of the Bell Telephone Company as to what you knew about the ram or about Drawbaugh's telephone; and who was it that spoke to you first about it?

Ans. Mr. Storrow and Mr. Comfort seen me in May, 1882.

Cross-Q 426. What did you tell them at that time that you knew about the ram?

Ans. I told them as far as I knowed that the ram was put in in 1878.

Cross-Q. 427. When did anybody come to see you again about it on behalf of the Bell Telephone Company; and who was it?

Ans. Mr. Comfort was to see me in January, 1883.

Cross-Q. 428. Did neither Mr. Storrow nor Mr. Comfort talk to you about it between May, 1882, and January, 1883?

Ans. No, sir.

Cross-Q. 429. How many different times did you see Mr. Comfort in 1883?

Ans. I seen him twice in January.

Cross-Q. 430. Where?

Ans. Both times in Marysville.

Cross-Q. 431. At what place in Marysville?

Ans. I seen him once at Neidig's; I was there, and he come there after me. The old gentleman is dead; the son's name is Harry. The other time I seen him I was up at my brother-in-law Zimmerman's.

Cross-Q. 432. Which time was first—the time he saw you at Neidig's or the time he saw you at Zimmerman's?

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Ans. The time he seen me at Neidig's.

Cross-Q. 433. Who was present while he talked with you at Neidig's?

Ans. Nobody but me and him, because we went out by ourselves.

Cross-Q. 434. Who was present while he talked with you at Zimmerman's?

Ans. Me and Mr. Storrow and Mr. Comfort was together.

Cross-Q. 435. Did you see Mr. Storrow again in January?

Ans. I just said I seen him in January.

Cross-Q. 436. I understand that, and I ask you if you saw him again in January?

Ans. No, sir; I only seen Mr. Storrow once in January.

Cross-Q. 437. Did you see Mr. Comfort in February, 1883?

Ans. I seen him down here in Philadelphia.

Cross-Q. 438. Nowhere else?

Ans. No, sir; I didn't.

Cross-Q. 439. Did you see Mr. Storrow in February, 1883; if so, how many times and where?

Ans. I seen Mr. Storrow here at the hotel. I don't know how many times I seen him, exactly.

Cross-Q. 440. Did you see Mr. Storrow or Mr. Comfort in March, 1883; if so, how many times and where?

Ans. I didn't see Mr. Storrow. I seen Mr. Comfort. I think it was in March. I was standing at the Harrisburg depot and he came there.

Cross-Q. 441. Did you talk with him then about any matter connected with this case?

Ans. No, sir. About all the words was passed, he asked me how I was getting along. It was after I was hurt.

Cross-Q. 442. At what time in February were you down here at this hotel?

Ans. I got here on the morning of the 15th of February.

Cross-Q. 443. Have you done any work for the Pennsylvania Steel Company since you got hurt?

Ans. No, sir.

Cross-Q. 444. Was it after you got hurt or before that you were down here in Philadelphia?

Ans. I was down here before I got hurt.

Cross-Q. 445. How happened you to come down here to Philadelphia in February, 1883?

Ans. Because they sent after me to come down.

Cross-Q. 446. How did they send?

Ans. Mr. Comfort's hired man came after me; at least I think it was his hired man.

Cross-Q. 447. How long were you down here in Philadelphia on that occasion?

Ans. I got here on Thursday morning and left on Saturday.

Cross-Q. 448. At what time on Saturday did you leave here?

Ans. I left the hotel between eight and nine, Saturday morning.

Cross-Q. 449. At what time of day did you leave home to come down here to Philadelphia on that occasion?

Ans. I left Steelton about 11.45.

Cross-Q. 450. Eleven-forty-five Wednesday evening or Thursday forenoon?

Ans. Eleven-forty-five Wednesday forenoon.

Cross-Q. 451. Did it take you from 11.45 Wednesday forenoon until Thursday morning to get there?

Ans. It did, the way I went.

Cross-Q. 452. Which way did you go?

Ans. I went to my father-in-law's, above Fairview about two miles, and changed my clothes, after I left Steelton.

Cross-Q. 453. Who paid your hotel bills and other expenses of that trip?

Ans. I don't know who paid my hotel bills; Comfort's hired man gave me ten dollars to start from Steelton.

Cross-Q. 454. How much money, besides that ten dollars, were you paid for that trip?

Ans. I left here on Saturday, and Comfort gave me ten dollars to go home on; that was all the money I got.

Cross-Q. 455. How much money have you been paid in all, by the Bell Telephone Company, up to the present moment?

Ans. Thirty-five or forty dollars.

Cross-Q. 456. You have stated that they paid you ten dollars when you started to come down, in February, and ten dollars when you started to return home; when did they pay you the other fifteen or twenty dollars, and where?

Ans. The twelfth of April I got fifteen to come down here with.

Cross-Q. 457. Who paid you that?

Ans. Harry Gardner gave me that.

Cross-Q. 458. What other money have they paid you besides those two tens and that fifteen?

Ans. Mr. Storrow gave me five dollars Saturday evening.

Cross-Q. 459. What other moneys have they paid you besides what you have now mentioned?

Ans. That is about all they have paid me that I know of.

Cross-Q. 460. Have they made you any presents of any kind; if so, what?

Ans. No, sir; they have made no presents to me.

Cross-Q. 461. Did they give you any theatre tickets here in Philadelphia?

Ans. No, sir, they didn't; when I go to the theatre I pay my way.

Cross-Q. 462. What is the railroad fare from Steelton to Philadelphia?

Ans. Three dollars and fifteen cents from Harrisburg; I went to Harrisburg to buy my ticket.

Cross-Q. 463. Do you remember having a conversation with Daniel C. Jones and Jacob Neidig at Knisely's hat store in Harrisburg, somewhere about two weeks ago, in which the subject of your coming down here to Philadelphia in February was mentioned?

Ans. No, sir; Jacob Neidig wasn't in the hat store when I was there.

Cross-Q. 464. Who was there when you were there?

Ans. I was in once when Dan. Jones was in and Sam. Knisely; both was there.

Cross-Q. 465. Do you remember having a conversation there with Daniel C. Jones, in which the subject of your coming down here to Philadelphia, in February, was mentioned?

Ans. Yes, sir; I was in there the evening I went up from here.

Cross-Q. 466. Did you have more than one conversation there with Jones on that subject?

Ans. I think I was in there the day I started down; I ain't right sure but I think I was.

Cross-Q. 467. Do you mean the day you started down on your present trip?

Ans. No, sir; the day in February.

Cross-Q. 468. Haven't you been in there since your February trip, except on the night when you returned from here?

Ans. Yes, sir; I go in every time I go to Harrisburg.

Cross-Q. 469. Have you had any conversation there with Daniel C.

Jones about your February trip at any time since that trip was made, except on the night of your return from Philadelphia?

Ans. No, sir; I have not.

Cross-Q. 470. In that conversation there with Daniel C. Jones, who was present, besides yourself and Jones, while you were talking about your February trip down here?

Ans. Nobody in the store that I seen, except me and Dan.

Cross-Q. 471. In that conversation did you not tell Mr. Jones that for your trip down here in February, for the Bell Telephone Company, you got forty dollars over and above your expenses?

Ans. No, sir; I did not.

Cross-Q. 472. What did you tell him about it?

Ans. I told him they gave me ten dollars to go down and ten to come up on. That was all the conversation we had about the telephone suit.

Cross-Q. 473. Did you not, in that conversation, say to him, substantially, the following words: "I was down two days and a half, and got forty dollars over my expenses,"—referring to your trip down here in February?

Ans. No, sir; I did not.

Cross-Q. 474. Did you never, at any time, say substantially that to him?

Ans. No, sir.

Cross-Q. 475. Did your brother John ever tell you what he got for coming from Chicago to testify for the Bell Telephone Company?

Ans. He never told me exactly what he got.

Cross-Q. 476. Did he tell you what he got per day for it, over and above his expenses?

Ans. No, he didn't.

Cross-Q. 477. What did he tell you about it; state all he told you?

Ans. He told me he got pretty near a hundred dollars; that's what he told me about it.

Cross-Q. 478. Did you have a conversation with George W. Drawbaugh in Harrisburg, on Inauguration day, in January last, about what your brother John got for coming on to testify for the Bell Telephone Company?

Ans. No, sir; I did not.

Cross-Q. 479. Did you ever talk with George W. Drawbaugh about it at any time, or any place: if so, when and where?

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Ans. I talked with George Drawbaugh about five minutes on Inauguration day.

Cross-Q. 480. Is that the only time you have talked to him since your brother John was on here to testiify?

Ans. I seen him at the White Hall restaurant the same day, but didn't talk with him.

[*Question repeated.*]

Ans. Yes, sir.

Cross-Q. 481. In that conversation on Inauguration day, was the subject of what your brother John got for coming on here to testify mentioned?

Ans. Not as I heard, it wasn't.

Cross-Q. 482. Didn't you at that time and place tell George W. Drawbaugh, that your brother John got seven dollars over and above his expenses, for coming on here to testify, and that it was a "pudding for John," and that you guessed they would come for you?

Ans. I told him no such words at all.

Cross-Q. 483. Did you tell him any part of that?

Ans. No, sir; we didn't have any conversation about the Bell Telephone Company at all that I heard.

Cross-Q. 484. Did you have any conversation about John, at that time, with George W. Drawbaugh?

Ans. John's name wasn't mentioned at all that I heard.

Cross-Q. 485. When did John tell you that he got about a hundred dollars for coming on here?

Ans. He told me in August, 1882.

Cross-Q. 486–7. Did he say he got about one hundred dollars over and above his expenses?

Ans. No, sir; he said he got about a hundred dollars for coming in, expenses and all.

Adjourned until April 19, 1883, at 10, A. M.

APRIL 19, 1883, 10, A. M.

Examination resumed.

Cross-Q. 488. When you were talking with Daniel C. Jones, did you tell him what a good time you had when you were down here for the

Bell Company, and how you had all the wine and cigars you wanted, at their expense, and everything else you wanted?

[*Question objected to, as containing a false and scandalous assumption.*]

Ans. I didn't tell him that I had any wine at all.

Cross-Q. 489. Did you never tell him that you were furnished with all the wine and cigars you wanted while you were here, without any expense to you?

Ans. I told him we had cigars.

Cross-Q. 490. Did you not tell him that you had wine also, without any expense to you?

Ans. No, sir; I did not.

Cross-Q. 491. When you were talking with George W. Drawbaugh, did you tell him anything about what your brother-in-law, Zimmerman, was paid for giving his testimony?

Ans. No, sir.

Cross-Q. 492. Didn't you tell him that your brother-in-law, Zimmerman, "made a good thing out of it," meaning thereby out of coming down here and giving his testimony?

Ans. No, sir.

Cross-Q. 493. Did you talk to him about your brother-in-law Zimmerman's giving his testimony, at all, or say anything about it?

Ans. No, sir.

Cross-Q. 494. Did you say anything at all to him about what your brother-in law, Zimmerman, made out of it, or how well he fared?

Ans. No, sir; I didn't.

Cross-Q. 495. Did you ever hear your brother-in-law, Zimmerman, say what he got for giving his testimony in this case?

Ans. I never heard him say exactly what he got.

Cross-Q. 496. Have you any understanding or agreement, as to what you are to get for giving your testimony?

Ans. No, sir; I have not.

Cross-Q. 497. Do you know William K. Fenn, the justice of the peace, for the borough of Marysville?

Ans. I know him when I see him; I am not particularly acquainted with him.

Cross-Q. 498. Did you ever have any talk with him about the putting in of the ram, at Draper's farm?

Ans. No, sir.

Cross-Q. 499. Was the subject never mentioned between you and him?

Ans. No, sir; it wasn't.

Cross-Q. 500. Didn't you have a talk with him, a few months ago, at Marysville about it, and about the testimony that your family had given in this case about it; and in that conversation didn't you tell him that you didn't know when the ram was put in; that you were not at home when the ram was put in; and that you believed that the rest of your family had got their dates wrong, (meaning your father, brothers, and brother-in-law, who had testified in this case, and meaning the dates they had given in their testimony, relating to the time when the ram was put in?)

Ans. No, sir; I did not.

Cross-Q. 501. Didn't you have a conversation at that time and place with him, in which you told him any of the things mentioned in my last question?

Ans. No, sir.

Cross-Q. 502. Did you never tell him at any time or place that you didn't know when that ram was put in?

Ans. No, sir; I didn't.

Cross-Q. 503. Did you never tell him at any time or place that you were not at home when that ram was put in?

Ans. No, sir.

Cross-Q. 504. Did you never tell him at any time or place that you were not there (meaning at your father's place) when that ram was put in?

Ans. No, sir; I didn't.

Cross-Q. 505. Did you never tell him at any time or place that you believed that the rest of the family had got their dates wrong, (meaning that your father, brothers, and brother-in-law had got their dates wrong in their testimony in this case, with relation to the time when that ram was put in?)

Ans. No, sir; I didn't.

Cross-Q. 506. Daniel C. Jones is a clerk in Mr. Knisely's hat store, is he not?

Ans. Yes, sir; he is.

Cross-Q. 507. Did you never have any conversation in Mr. Knisely's presence about your trip down here for the Bell Telephone Company, in February, 1883?

Ans. I had a conversation in there in March, after I was hurt.

Cross-Q. 508. Who was present at that conversation?

Ans. Sam Knisely, Dan Jones, and myself.

Cross-Q. 509. What did you tell them about your trip down here in that conversation.

Ans. Sam asked me what I got for coming down, and I told him.

Cross-Q. 510. State all that you told him about your trip down here in that conversation?

Ans. I told him I got ten dollars for coming down, and ten for going up.

Cross-Q. 511. What else did you tell him about it?

Ans. I didn't tell him nothing else.

Cross-Q. 512. What did he say, and what did Jones say about it, in that conversation?

Ans. Knisely didn't say anything; Jones said I made out better than he did; he said he never got a damn cent for what he did—up to that date.

Cross-Q. 513. For what he did as witness for the Bell Telephone Company, or for what he did as witness for the People's Telephone Company?

Ans. As witness for the People's Telephone Company.

[*Examiner notes, at request of Mr. Storrow, that Daniel C. Jones was examined before him as a witness for defendants, but was never examined before him as a witness for complainants.*]

Cross-Q. 514. Was that conversation in Knisely's hat store, in Harrisburg?

Ans. Yes, sir; it was.

Cross-Q. 515. How long was it after you got hurt at the Pennsylvania Steel Company's works?

Ans. It was the following week. I got hurt on Saturday, and it was the next week. I don't know what day it was.

Cross-Q. 516. In your 469th answer you testified that you never had any conversation there with Daniel C. Jones about your February trip at any time since that trip was made, except on the night of your return from Philadelphia; you now testify that you had a conversation with him there about it after you got hurt in March; which of said statements is true, and which is untrue?

[*Complainants' counsel objects to the assumption in the question that there is any inconsistency in the answers as given by the witness to the special questions addressed to him.*

Respondents' counsel says that the witness was sworn to tell the truth and the whole truth.

Complainants' counsel completes the quotation, "in answer to such questions as shall be put to you."]

Ans. I didn't have no conversation in March; he just asked me what I got, and I told him.

Cross-Q. 517. Did Mr. Fenn, the justice of the peace at Marysville, ever ask you anything about the ram or the time it was put in, or your recollection about it, or the testimony of any of your relatives or connections about it?

Ans. He never said anything to me about it.

Cross-Q. 518. Are you sure about that?

Ans. I am, or I wouldn't say it.

Cross-Q. 519–20. Are you as sure of it as you are of anything else that you have testified to in this case?

Ans. Yes, sir; I am.

Redirect by Mr. Storrow:

Q. Q. 521. When Mr. Drawbaugh came to see you at work on the N. C. railroad, near Fairview, and showed you some instruments, was there any snow left on the ground or not?

Ans. There was some snow; the ground wasn't covered with snow.

Q. Q. 522. Did Mr. Drawbaugh at that time say anything about having been down to Maryland to see your father?

Ans. Yes, sir, he said he was down and seen him.

Q. Q. 523. When you went up to Mr. Keller's to get the auger which you have testified about, did you say anything to him about your father's having arranged with him to get the auger; and if so, what was said about it?

Ans. I went up there and asked him about getting the auger to bore pipe. He said he didn't loan his auger. I told him my father sent me after it; he asked me who my father was; I told him George Kissinger; then he said he promised it to him, and then he gave it to me.

Q. Q. 524. In your 183d and other cross-answers you stated in substance that the logs were bored green, and each of them buried pretty soon after it was bored without waiting for the others to be finished. Was there any reason for getting them bored and underground before they had time to dry; and if so, what was it?

Ans. Yes, sir; my father said if they would be bored and left lay

out, the wind would shake the ends of them; I mean the wind would crack them; "windshake" they call it.

Q. Q. 525. I understand also from the same part of your testimony that the trench was not dug the whole way from the spring to where the ram was to be, at one time, but that when you got ready to bury a few lengths of pipe, trench enough was dug for them and those pipes laid and filled in; was there any reason why it wouldn't do to dig that trench the whole length and leave it open a long while; and if so, what was it?

Ans. Yes, sir, there was; and we didn't want it to lay open for the cattle to run over it. It was not just in the barnyard; it wasn't in the barnyarn that was fenced up; this part was open.

Q. Q. 526. When Mr. Drawbaugh came to see you at Steelton during the present month, how long did he stay?

[*Objected to as new matter not referred to on cross-examination.*]

Ans. I don't know exactly how long he was there.

Q. Q. 527. Give me your best recollection about it.

[*Same objection.*]

Ans. As near as I can tell, it was about between twelve and fifteen minutes he was there.

Q. Q. 528. Was he alone, and if not, who was with him?

[*Same objection.*]

Ans. Mr. Jacobs, he said, was out in the buggy. They had a buggy out there, and one of them was in it.

Q. Q. 529. Then Mr. Drawbaugh was the only one who came into the house and talked to you at that time, was he?

[*Same objection.*]

Ans. Mr. Drawbaugh wasn't in the house; he was standing out along side of the house talking.

Q. Q. 530. Did Mr. Jacobs take part in the conversation between you and Mr. Drawbaugh at that time?

[*Same objection.*]

Ans. No, sir; Mr. Jacobs wasn't in at all; he was sitting out in the buggy.

Q. Q. 531. Did Mr. Drawbaugh and Mr. Jacobs return again and speak to you about the ram that same day?

[*Same objection.*]

Ans. Yes, sir.

Q. Q. 532. Did Mr. Jacobs take part in that second conversation?

[*Same objection.*]

Ans. Yes, sir.

Q. Q. 533. It appears that you were married in July, 1878, to Miss Boyer; when did you begin to call upon her, or keep company with her?

[*Same objection.*]

Ans. In the fall of 1877.

Q. Q. 534. Please give me an idea how late in the fall, if you can.

[*Same objection.*]

Ans. It wasn't a great while before the holidays.

Q. Q. 535. You were cross-examined about the building of a portico at your father's house in Marysville, and in your 373d cross-answer you said that it was on the south side of the house; was that the front of the house?

Ans. Yes, sir; it is the front of the house; it faces the public road.

Q. Q. 536. Was there any porch or portico on any other side of the house, while you lived there?

Ans. No, sir; there wasn't.

Q. Q. 537. When your brother John was east last summer, did he tell you what pay he was then getting in Chicago; and if so, what?

Ans. Yes, sir; he told me he was getting fifteen dollars a week.

Q. Q. 538. In your 450th and following cross-answers, you stated that when you came down here, in February last, you left Steelton in the forenoon and went to Harrisburg; did you go to Harrisburg by rail; and how far is it?

Ans. Yes, sir; I went up by rail; it is counted three miles from Steelton to the depot at Harrisburg.

Q. Q. 539. You then stated that you went from Harrisburg to your father-in-law's, at Fairview, to change your clothes. How did it happen that your clothes that you wanted to wear down here were at your father-in-law's?

Ans. My wife was there, and after I come from Chicago I took my trunk there.

Q. Q. 540. How did you go from Harrisburg to your father-in-law's that day, and how far is it?

Ans. I walked from Harrisburg; it is counted five miles.

Q. Q. 541. Did you come down here that night by the express that leaves Harrisburg about midnight?

Ans. Yes, sir; I went from my father-in-law's to Marysville; that is counted three miles; I walked up; I came to Harrisburg on the mail that comes through Marysville at seven-eleven, I think, schedule time.

Q. Q. 542. How far is it from Marysville to Philadelphia by rail.

Ans. About one hundred and five miles from Harrisburg to Philadelphia, and about seven miles from Marysville to Harrisburg.

Recess until 3, P. M.

Q. Q. 543. You testified that you left here on the following Saturday; what train did you go in, and at what time did you get to Harrisburg?

Ans. The train was to leave here at 11.45, but it was some behind time; I don't know how much. I got to Harrisburg, I think, between three and four; I ain't sure, though.

Q. Q. 544. Did you go that night to your father-in-law's, where your family were; and if so, how did you get there?

Ans. Yes, sir; I went the same night; I walked from Harrisburg up.

Q. Q. 545. In your 480th cross-answer you say that on Inauguration day you saw George Drawbaugh at the White Hall restaurant; by restaurant, do you mean the cellar under the White Hall house where they sell refreshments and liquors?

Ans. Yes, sir.

Q. Q. 546. You say you saw him at the restaurant; were you in it yourself or were you outside when you saw him?

Ans. I wasn't in it myself; I was walking along the pavement and I seen him there.

Q. Q. 547. Where was he and who was with him?

Ans. He was leaning up against the iron bannister that goes down to the White Hall restaurant; Dave Ditlow and Abe Ditlow were with him when I saw him.

Q. Q. 548. Did you speak to any of them, and if so, to whom; and state what took place?

Ans. I spoke to Abe and shook hands with him; then me and Abe was talking. He asked me whether I was married; I told him I was. He asked me how many children I had; I told him three. Then George Drawbaugh and Dave Ditlow started down; I thought they was going into the beer saloon. They asked Abe to come on, and then Abe asked me and I told him I didn't care about going.

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Q. Q. 549. The George Drawbaugh referred to is the nephew of Daniel Drawbaugh and son of John Drawbaugh, is he not?

Ans. Yes, sir.

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me this 19th day of April, 1883.

FRED. M. OTT,
Examiner.

CYRUS KISSINGER.

DANIEL HART, *being produced, affirmed, and examined, saith:*

Examined by Mr. Storrow:

My age is sixty-six; residence, Cumberland county, Pennsylvania, near Milltown; I help my son to farm.

Q. 1. Do you own the farm?

Ans. Yes, sir.

Q. 2. How far from the grist-mill is your house?

Ans. It is between two and three hundred yards—not over three.

Q. 3. How long have you lived at Milltown?

Ans. Some fifty years anyhow.

Q. 4. How long have you know Daniel Drawbaugh?

Ans. I have know him from a boy, pretty much.

Q. 5. About when did you first hear of Bell's telephone?

Ans. The first I heard of it was the time of the Centennial.

Q. 6. Had you at any time before that heard that Daniel Drawbaugh had a talking-machine or a telephone?

[*Objected to as leading.*]

Ans. No; I don't know as I had.

Q. 7. When you heard of Bell's telephone, did it strike you as something new; did it strike you that you had long heard that Drawbaugh had one in Milltown?

[*Same objection.*]

Ans. I don't know as it struck me anything of that kind, either way.

Q. 8. If Drawbaugh had had a talking-machine that people could talk over for six or eight years before that, and it had been common

talk in the village for six or eight years, do you think you would have heard of it?

[*Objected to as leading, hypothetical, argumentative, incompetent, and calling for mere opinion.*]

Ans. I should think I would.

Q. 9. Did you ever hear of Drawbaugh's having a machine to ring bells in hotels?

[*Objected to as irrelevant and immaterial.*]

Ans. I heard of it; yes.

Q. 10. Did you ever hear of his having a machine to telegraph without a battery?

[*Same objection.*]

Ans. I wouldn't be so positive of that, but I think I did.

Q. 11. Did you ever hear of his having a mill-tram for levelling the aces of millstones?

[*Same objection.*]

Ans. I wouldn't be so positive of that, but I think I did, too.

Q. 12. Did you hear of his having a nail machine for making nails, or feeding nail plates?

[*Same objection.*]

Ans. Yes, I did; I saw some of the nails that was cut on it, too.

Q. 13. There was a man by the name of Wesley Smith lived at Milltown, in the latter part of 1874, and worked at printing there for Mr. Holsinger; has he been around Milltown peddling since he moved away?

Ans. Yes, sir; he was at my house several times.

Q. 14. How lately have you seen him around there?

Ans. I couldn't say exactly, but I don't think he has been around for two years, anyhow.

Q. 15. Do you know David H. Good?

Ans. Yes, sir.

Q. 16. He has testified, page 527 of defendants' record, that he kept store at Eberly's Mills, from the spring of 1867 to the fall of 1870; do you remember his keeping store there?

Ans. Yes, sir.

Q. 17. Did Mr. Drawbaugh ever tell you, at David Good's store, that

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he had a talking-machine, which he could talk through as plain as one person could talk to another in a room?

Ans. No, sir; never, to the best of my knowledge.

Q. 18. Did he ever tell you, at David Good's store, that he had any kind of a talking-machine?

Ans. No, sir; not to the best of my knowledge.

Q. 19. You have been quite sick during the last two or three months, have you not?

Ans. I have not been well for the last five or six months; of course I was about, but I was not well.

Cross-examined by Mr. Hill:

Cross-Q. 20. I suppose you don't remember everything that anybody told you during the years from 1867 to 1871, do you?

Ans. I don't pretend to know everything; I know some things.

Cross-Q. 21. It may be possible that Mr. Drawbaugh told you at David Good's store that he had a talking-machine, and that the conversation has passed out of your memory, may it not?

Ans. It might, but I am satisfied it never did. He never talked to me about it at the store.

[*Last clause of the answer, commencing with "but," objected to by Mr. Hill as not responsive, but mere opinion and volunteered.*]

Cross-Q. 22. Have you any recollection of ever meeting Daniel Drawbaugh at David Good's store?

Ans. I guess I have met him there—I am sure I have, but I don't know how often I have met him there.

Cross-Q. 23. Do you remember seeing him there at any time while Mr. Good kept that store?

Ans. I guess I have, but I don't remember, of course.

Cross-Q. 24. Tell me when was the earliest time that you remember of hearing about Drawbaugh's talking-machine, and who it was that told you about it?

Ans. The first I heard of it was about the time when they were bargaining with them two western men. I don't remember exactly when it was, nor who told me; but it was the talk that they were selling to them western men.

Cross-Q. 25. Explain more fully what you mean by selling to these western men; who was selling; selling what; to whom; and when was it?

Ans. Why, I just mean that they were selling the talking-machines to these Western men, but what their names is, that I don't know. Mr. Drawbaugh, there, was one who was selling; Mr. Chellis, Mr. Jacobs here, and I understood that Hen. Bowman was another; but I have since understood that it was this gentleman here (indicating Mr. Hill) was the one. I don't know how it is. I couldn't just say when it was. It is some three years ago, I guess; I couldn't say.

Cross-Q. 26. That was the first time that you remember hearing of Mr. Drawbaugh's talking-machine, was it?

Ans. Yes, sir.

Cross-Q. 27. Mr. Drawbaugh did not sell his talking-machine till about July, 1880, and then he sold it through Mr. Chellis, Mr. Jacobs, and others, to the People's Telephone Company; that was the time you refer to, I suppose, was it not?

Ans. That was the time, I guess; I was told they were selling it to these two Western men; of course I don't know who they sold it to.

Cross-Q. 28. Who told you about that?

Ans. That I can't tell you; Drawbaugh's son was one who told me; he was only a boy: he is the only one I can recollect.

Cross-Q. 29. Do you think Drawbaugh could have had talking-machines in his shop and they have been talked about in the community for three or four years before that sale to the western parties, and you not heard anything about it?

Ans. Well, he might have; because I don't get into his shop once in—I was going to say, three years; but I am satisfied I haven't been in his shop for two years; and as to running to the store, where they gather, I don't do that, either. I, especially at night, don't go to the store at all, unless it is something that must be. Them is two of our gathering places, and now the mill is another; and now I don't go there at night. Through the day I have my business at home that I don't get out of the range.

Cross-Q. 30. You never did go much to Drawbaugh's shop or the store or the mill, did you?

Ans. I never went much to the shop, no; I went to the store oftener than I did to the shop or the mill, but mostly I had business there.

Cross-Q. 31. When you went to Drawbaugh's shop you went on business, I suppose?

Ans. When I went there I generally wanted something; I went

there with a couple of men once who were stopping at my house and wanted to go down there.

Cross-Q. 32. Who were they and when was it?

Ans. The one was a nephew of mine, Jacob Grissinger; there was only him that time. He died a year or so ago. He wanted to go down to see some clocks. I don't remember who the other person was; I can't just say when it was.

Cross-Q. 33. If Mr. Drawbaugh might have had talking-machines in his shop and they might have been talked about in the community for three or four years prior to the summer of 1880 without your hearing about it, then I suppose that the same might be true for ten or twelve years prior to the summer of 1880; might it not?

[*Objected to as hypothetical and argumentative.*]

Ans. It might be, but I don't think that it could have been but what I would have known of it. For one reason, when they sold for twenty thousand dollars it was soon spread over the country that Dan. Drawbaugh was going to be a rich man. That is one reason why I think if this talking-machine would have been there for three or four years, I think I would have heard of it. That is one of my reasons for answering that.

Adjourned until April 20, 1883, at ten, A. M.

APRIL 20, 1883, 10, A. M.

Examination resumed.

Cross-Q. 34. If Drawbaugh had the talking-machine three or four years before the summer of 1880 without your hearing or knowing of it, then may he not have had it there ten or twelve years before the summer of 1880 without your hearing of it?

Ans. No, he couldn't have had it there three or four years, nor the ten or twelve either, unless he would keep it hid or in the dark, which I believe he done; because he always worked at such machinery at night that he didn't want known.

Cross-Q. 35. Were you ever at his shop at night when he was at work?

Ans. No; I wouldn't say positively I was; I might have been.

Cross-Q. 36. How do you know then that he worked at night on the machinery which he wished kept secret?

Ans. Because I heard others say that he worked half of the night nearly at machinery; I heard him say myself that he worked at night a good part of the time; and I saw light in his shop several times that I think he was working.

Cross-Q. 37. Then you think that he couldn't have had it there three or four years before the summer of 1880 without your hearing of it?

Ans. No, as I stated before, he couldn't unless he would have kept it hid—kept it in the dark.

Cross-Q. 38. You think that if he had had it there three or four years before the summer of 1880, and had showed it to others, or told others about it, you would have heard of it, do you?

Ans. That might have been done, and I wouldn't have heard of it; he might have shown it to some, for I believe that he had some folks that he would show it to, where he wouldn't to others, and I might never have heard of it.

Cross-Q. 39. Well, if that might have been going on for three or four years prior to the summer of 1880, it might also have been going on for ten or twelve years prior to the summer of 1880, might it not?

Ans. That I'll answer you in the same way that I did the other; it couldn't have been without being kept in the dark.

Cross-Q. 40. When did you first hear of his having electric clocks?

Ans. I couldn't give no date or idea when I heard of them first, but it is several years.

Cross-Q. 41. Was it after the Centennial; if so, how long after?

Ans. I guess I heard them—I couldn't say whether I heard of them before the Centennial or not.

Cross-Q. 42. Did you hear of them long before the time that Grissinger and Shettel began to negotiate with Drawbaugh about them?

Ans. I don't think I did hear long; I had heard before that, but I couldn't say how long, because when Jacob Grissinger came to my place I told him about these clocks that Drawbaugh had. He asked me to go along down to see them, and we went down then, down into the shop. I don't mind whether Grissinger told him that he came down for to see the clocks or not, but I think he did; anyhow, he got to showing him the clock.

Cross-Q. 43. How many time has John C. Comfort been to see you about what you knew or had heard of Drawbaugh's affairs?

Ans. He never came to see me but once about what I knew of these affairs.

Cross-Q. 44. When was that?

Ans. I couldn't tell you when it was; it is not so very long. It might have been two or three months; it might not have been that long. I wouldn't set no time, for I don't mind such things.

Cross-Q. 45. How many times has he been at your house within the last year?

Ans. That I couldn't tell how many times, because I don't think he ever gets to my house till this here comes up that he wanted me to come down here as a witness. He came there to subpœna me one day; I had been sick for some time; I told him I wouldn't go; I told him I wasn't fit to go; he said then that he would leave it be for awhile, that maybe I would get better; I told him if I got better and had to come I would come. So he came back in a few days—it wasn't long, anyhow—and he asked me if I thought I was fit now; I told him I wasn't; so he came back in, maybe, a week, and I won't go any further, because I ain't sure if he came any more after me or not; I think he was there three or four times after me before I would come.

Cross-Q. 46. How near does your son and his family live to you?

Ans. We don't live over fifty yards apart, I don't think; maybe a little more, maybe a little less.

Cross-Q. 47. Did you never hear your wife, or your son, or any of his family, mention Drawbaugh's talking-machines before the summer of 1880?

[*Objected to as heresay.*]

Ans. No, sir; not that I know of.

Cross-Q. 48. You have two grown-up daughters living at home with you, have you not?

Ans. Yes, sir.

Cross-Q. 49. Did you never hear them mention Drawbaugh's talking-machine before the summer of 1880?

Ans. Not that I know of, not Drawbaugh's.

Redirect by Mr. Storrow:

Q. Q. 50. I understand from your testimony that for some years past you have given up running your farm yourself and your son has carried it on; is that the fact?

Ans. Yes, sir.

Q. Q. 51. I understand from your testimony also that for some years past you have kept pretty close at home at night, and have not been

going to the store and other places of gathering in the evening unless you had to go on some business, is that the fact?

Ans. That is the fact.

Q. Q. 52. Eight or ten or twelve years ago, when David Good and George Kissinger and Abner Wilson and others kept the store, were you or were you not in the habit of going there in the evening to pass the time and talk?

Ans. Yes, sir; I was; I was there nearly every evening then.

Re-cross by Mr. Hill:

Re-cross-Q. 53. At that time did you go to the store mostly on business, or to talk and spend the evenings?

Ans. I went there to pass away the time; sometimes of course I had business.

Re-cross-Q. 54. But you went there mostly to pass the time and talk with the neighbors?

Ans. Yes; sometimes I would go there for something out of the store.

Re-cross-Q. 55. Do you really know whether you went there mostly on business, or mostly to talk and pass away the time?

Ans. I couldn't say, but of course sometimes I went on business, and sometimes I went there to pass away the time.

Re-cross-Q. 56. Then when you testified in substance yesterday in cross-answer 30, that you went there mostly on business, and again testified a little while ago in substance, that you went there mostly to talk and pass away the time, I suppose you were merely guessing at it, were you not?

Ans. It seems strange, but I don't guess at things. It is a little wrong some place. I testified yesterday that I didn't run to the store for the last—I don't know how long I had it yesterday—but anyhow for the last three or four years, or haven't been lately. And to-day the question was put to me, whether eight or ten years ago I didn't run to the store a great deal. My answer was, that I did at that time, but for the last four or five years I haven't been running there much.

Re-redirect by Mr. Storrow:

Q. Q. Q. 57. In your 34th and 36th cross-answers, you speak of Drawbaugh's working at night on machinery which he wished to keep secret; I suppose you don't know what it was he worked on at night for the purpose of keeping it secret, do you?

Ans. No, sir.

Re-re-cross by Mr. Hill:

Re-re-cross-Q. 58. And you don't know that he actually proposed to keep *anything* secret, do you?

Ans. I don't know what his idea was in it, without it was to keep people from knowing it until getting it into some shape to see whether it would work or not, or make anything; that is all I would know.

[*All after the words "I don't know what his idea was in it" objected to by Mr. Hill as not responsive, and as guesswork and mere volunteer opinion.*]

Re-re-cross-Q. 59. You don't even know what he was working on at night, do you?

Ans. I stated yesterday that it would be hard for me to say what he was working at, for I stated I was not in the shop at night. To the best of my knowledge I was never in his shop at night.

Examination taken, reduced to writing, and by the witness affirmed and subscribed to before me, this 20th day of April, 1883.

FRED. M. OTT,
Examiner.

DANIEL HART.

HENRY NEIDIG, *being produced, sworn and examined, saith:*

Examined by Mr. Storrow:

My age is forty-eight; residence, Lake Spring farm, Lower Allen township, Cumberland county, Penna; occupation, farmer.

Q. 1. Are you the father of Jacob Neidig, who keeps a notion store in Harrisburg, and whose deposition taken about a month ago in this case, is printed on page 1235, complainants' record?

Ans. Yes, sir.

Q. 2. He testified that you moved to Lake Spring farm in the spring of 1870; is that the fact?

Ans. That's right, sir.

Q. 3. Where had you lived for four or five years before that?

Ans. A short mile above Shiremanstown—up farther from the river.

Q. 4. How long did you live at Lake Spring farm before you moved away, and when did you move away?

Ans. I lived there seven years; I moved away in the spring of 1877.

Q. 5. Where did you move to then?

Ans. Harrisburg.

Q. 6. When did you move away from Harrisburg?

Ans. The spring of 1882.

Q. 7. Where did you move to then?

Ans. Back on the Lake Spring farm.

Q. 8. What were your occupations in Harrisburg, from the spring of 1877 till the spring of 1882?

Ans. Livery and boarding-stable and hotel business.

Q. 9. What hotels did you keep there?

Ans. White Hall hotel and the Jones House, at different times.

Q. 10. Did you live at Harrisburg all the time, from the spring of 1877 to the spring of 1882, or did you live elsewhere any part of that time; and if so, when and where?

Ans. I lived in Baltimore part of that time in 1879.

Q. 11. How long have you known Daniel Drawbaugh?

Ans. I couldn't tell you exactly, but I suppose that I have known him for twenty years, or known of him.

Q. 12. Before you moved to Lake Spring farm in 1870 had you bought any machinery from Mr. Drawbaugh, or had any dealings of that kind with him?

Ans. I had.

Q. 13. What?

Ans. I bought what we call a tram to dress mill-burrs, or not to dress them exactly, to level them.

Q. 14. Were you running a mill at the time; and if so, where and what mill?

Ans. I had the mill rented that we now call Hake's mill, now owned by Eli Hake; that wasn't the name of the mill when I was there; I don't know what name it goes by now.

Q. 15. Is that the first mill on the Yellow Breeches above Milltown?

Ans. Yes, sir.

Q. 16. About when did you leave that mill, and did Hake buy it after you left?

Ans. I couldn't tell you the date when I left that mill; I don't remember. Hake bought it long afterwards.

Q. 17. While you lived at Lake Spring farm, did you put in one of Drawbaugh's water rams?

Ans. Yes, sir.

Ans. No, sir.

Re-re-cross by Mr. Hill:

Re-re-cross-Q. 58. And you don't know that he actually proposed to keep *anything* secret, do you?

Ans. I don't know what his idea was in it, without it was to keep people from knowing it until getting it into some shape to see whether it would work or not, or make anything; that is all I would know.

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Ans. I stated yesterday that it would be hard for me to say what he was working at, for I stated I was not in the shop at night. To the best of my knowledge I was never in his shop at night.

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Ans. Yes, sir.

Q. 2. He testified that you moved to Lake Spring farm in the spring of 1870; is that the fact?

Ans. That's right, sir.

Q. 3. Where had you lived for four or five years before that?

Ans. A short mile above Shiremanstown—up farther from the river.

Q. 4. How long did you live at Lake Spring farm before you moved away, and when did you move away?

Ans. I lived there seven years; I moved away in the spring of 1877.

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Ans. Harrisburg.

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Ans. Livery and boarding-stable and hotel business.

Q. 9. What hotels did you keep there?

Ans. White Hall hotel and the Jones House, at different times.

Q. 10. Did you live at Harrisburg all the time, from the spring of 1877 to the spring of 1882, or did you live elsewhere any part of that time; and if so, when and where?

Ans. I lived in Baltimore part of that time in 1879.

Q. 11. How long have you known Daniel Drawbaugh?

Ans. I couldn't tell you exactly, but I suppose that I have known him for twenty years, or known of him.

Q. 12. Before you moved to Lake Spring farm in 1870 had you bought any machinery from Mr. Drawbaugh, or had any dealings of that kind with him?

Ans. I had.

Q. 13. What?

Ans. I bought what we call a tram to dress mill-burrs, or not to dress them exactly, to level them.

Q. 14. Were you running a mill at the time; and if so, where and what mill?

Ans. I had the mill rented that we now call Hake's mill, now owned by Eli Hake; that wasn't the name of the mill when I was there; I don't know what name it goes by now.

Q. 15. Is that the first mill on the Yellow Breeches above Milltown?

Ans. Yes, sir.

Q. 16. About when did you leave that mill, and did Hake buy it after you left?

Ans. I couldn't tell you the date when I left that mill; I don't remember. Hake bought it long afterwards.

Q. 17. While you lived at Lake Spring farm, did you put in one of Drawbaugh's water rams?

Ans. Yes, sir.

Q. 18. Have you got the bill of it; and if so, please produce it?

Ans. I have, and produce it; it is as follows:

"EBERLY'S MILLS, Pa. *June* 10, 1871.

Mr. HENRY NEIDIG,

To DRAWBAUGH & SADLER, Dr.

May 27, 1871, to one Water Engine		$11 00
,, to 233 feet Lead pipe at 12 c. foot, ...		27 96
,, to 51 feet Drive pipe 1½ in at 40, ...		20 40
,, to one ½ inch Union, ...		44
,, to two ½ inch Ells at 10, ...		20
		$60 00

Received payment,

DRAWBAUGH & SADLER."

Q. 19. Had the ram been put in before that bill was rendered to you?

Ans. Yes, sir.

Q. 20. The bill is dated June 10, 1871, but the items are all dated May 27, 1871; I suppose May 27, 1871, was the time when they were put in, and June 10, 1871, the time when the bill was rendered; is that the fact?

Ans. Yes, sir.

Q. 21. Did you in the following year obtain from Mr. Drawbaugh, and put in some more leading-pipe to distribute the water to different parts of your premises?

Ans. I did.

Q. 22. If you have his bill for that pipe, will you please produce it, and let a copy of it be made part of your answer?

Ans. I have, and I produce it; it is as follows:

"EBERLY'S MILLS, *May* 29, 1872.

"HENRY NEIDIG to DAN'L DRAWBAUGH, Dr.

"May 16, 1872, to 70 feet 5-8 pipe at 14 cents per foot, .		$9 80
"to one ell, ...		17
"to one thimble, ...		14
"to fitting pipe, ...		80
"17, to 39 feet 5-8 pipe, ...		5 46
		$16 37
By cash, ...		5 00
		$11 37

Received payment,

DANL. DRAWBAUGH."

Q. 23. Do you know Mr. Henry Herr, a witness who testified for defendants, and whose deposition is on page 695 of defendants' record?

Ans. Yes, sir; I know him.

Q. 24. He says he is a cousin of yours; is that the fact?

Ans. Yes, sir.

Q. 25. He says that he had one of Drawbaugh's rams put into his place, and that you were the person who told him about them, and led to his putting it in; is that the fact?

[*Objected to as not properly stating the testimony of Mr. Herr.*]

Ans. I think so.

Q. 26. Do you remember telling Mr. Herr about the Drawbaugh ram; and if so, where were you and he when you told him?

Ans. I remember of talking to him about it, but I don't remember where we were at the time.

Q. 27. Did you have any talk with him on his farm and go with him and look at the place where it was proposed to put it in?

Ans. I don't remember where it was; I did not go with him to look at the place where it was proposed to put it in. I knew all about his place, from the simple fact that I used to live there myself. There was no occasion for me to go there and look at it.

Q. 28. On that occasion when you spoke to him about the Drawbaugh ram, did you and he have any conversation or discussion as to whether it would do the work at his place; and if so, state the substance of that conversation?

[*Objected to as immaterial, irrelevant, and incompetent.*]

Ans. We had a conversation; I told him that I thought it would work, and he had better get Mr. Drawbaugh to come over and look at the place.

(Recess until three, P. M.)

Q. 29. Was it in consequence of your telling him about the Drawbaugh ram and advising him about it that he put it in?

[*Objected to as calling for mere opinion and incompetent.*]

Ans. I rather think so; I don't know. I have some information in regard to it.

Q. 30. What is that information, if it was information that you obtained anywhere about that time?

[*Objected to if the information is derived from statements of others, on the ground that it is hearsay and incompetent.*]

Ans. He wanted to know whether I thought it would work at his place; whether after being put up it wouldn't be more bother than it was worth to keep it going; I told him that I thought that if he had power enough it would work, because there wasn't anything to disturb it; that there wasn't any dirt nor moss nor anything to disturb it; he had a good place to work it.

Q. 31. Was there any question between you as to whether he had power enough, and what was said about that?

[*Same objection.*]

Ans. I think he asked that question, and I told him I didn't know anything about that, but that he should ask Mr. Drawbaugh to come over and he would tell him all about it.

Q. 32. Was this talk or advice to him before or after you had got your ram in and running at the Lake Spring farm?

Ans. It was after.

Q. 33. Do you know John Stephens, who lives at Sporting Hill, up beyond Oyster's Point, and did he have one of Drawbaugh's rams?

Ans. There is one on the farm there, but whether it really belongs to him or not I don't know.

Q. 34. Was that put on that farm before or after yours was put in?

Ans. Afterwards.

Q. 35. Did you ever have one of Drawbaugh's rams before the one which you had put in at Lake Spring farm?

Ans. No, sir.

Q. 36. It appears from the bill that that ram was put in about the last of May, 1871; did Mr. Drawbaugh come there and put it in or help put it in?

Ans. I don't remember right whether he was there when we started or not; but he was there at different times to see it work and helped to make it work.

Q. 37. Did you put in a steamer during that same year at the farm?

Ans. I tried a steamer there; I don't remember whether it was that fall or the fall of 1872; I wouldn't be positive.

Q. 38. Did you afterwards replace that steamer by a larger and better one?

Ans. Yes, sir.

Q. 39. About how long after the first was put in did you put in the second one?

Ans. The following spring or summer; about June.

Q. 40. Were you running the farm yourself or was Mr. Beck running it when the second steamer was put in?

Ans. I was running it myself.

Q. 41. How long did you run the farm before Mr. Beck took it, and when did he take it?

Ans. I ran it three years from the time I moved there.

Q. 42. Did you buy the farm when you moved there; and if not, when did you buy it?

Ans. I bought it in 1871.

Q. 43. Before you put the ram in?

Ans. Yes, sir.

Q. 44. As Mr. Beck took the farm in the spring of 1873, you must have put your second steamer in in 1872, and your first one in 1871; is that correct?

Ans. Yes, sir.

Q. 45. Did you continue to own and live on the farm while Beck run it?

Ans. Yes, sir.

Q. 46. Referring now to the first steamer which you put in in 1872, did Mr. Drawbaugh furnish some pipe and fittings for that; and if so, give me some idea of how much he furnished?

Ans. He furnished some; I couldn't give you an idea how much; I have no idea; it took a good deal of piping.

Q. 47. How much piping did it take to go from the steamer to the ram, and did he furnish that?

Ans. It took in the neighborhood of a hundred feet; I think he furnished that.

Q. 48. Did he furnish other piping to go into the barn and other places?

Ans. There was some piping in the cellar that went along the hogsheads lengthwise and then into them, and pieces and fitting, etc.; he furnished these.

Q. 49. Did he furnish the steam valves, and what kind of valves were they?

Ans. He furnished some of them. I don't think he furnished them all. I don't know what you would call them. I don't know the difference between one and another. I know what they are for when I see them.

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Q. 50. How large pipe was this steam pipe that he furnished?

Ans. I think it was three quarter inch; I am not sure.

Q. 51. Did he do the cutting and fitting?

Ans. He done some of it; some of it we done ourselves; we pressed his tools.

Q. 52. From the price he charged you for half inch and five eighths pipe in the bills put in, I judge that the pipe and fittings he furnished for your first steamer must have amounted to quite a considerable sum; can you give me some idea how much it was?

[*Respondents' counsel objects to an answer of mere guess-work.*]

Ans. I think it cost in the neighborhood of a hundred dollars or more.

Q. 53. My question related to the pipe for the steamer and not for the ram; did you so understand it?

Ans. I am a little high for the steamer; I thought he was alluding to the pipe for the ram; the pipe for the steamer and fixings, I think, was just about fifty dollars or along there.

Q. 54. Did he furnish some piping and fittings for your second steamer that you put in in 1872?

Ans. I think he did.

Q. 55. Did you, from time to time, after you got the second steamer in, extend or alter or change the piping or valves for steam or for water?

Ans. I did; I was experimenting all the time.

Q. 56. Did Mr. Drawbaugh do the machine work and furnish the fittings and new piping which these changes required?

Ans. Yes, sir; I think he did all of them.

Q. 57. When you had occasion for materials or services from Mr. Drawbaugh for these various piping jobs and changes did you generally go to the shop yourself or send some one; and if the latter, whom did you commonly send?

Ans. I generally sent some one; and most commonly I think my son Jacob.

Q. 58. Was your son Jacob a person who was observant of and interested in mechanical matters?

[*Objected to as immaterial, irrelevant, and incompetent, and calling for mere opinion.*]

Ans. He was to a certain extent, yes, sir.

Q. 59. While you lived in Cumberland county did you ever hear of Mr. Drawbaugh having a talking-machine or telephone?

Ans. I did not.

Q. 60. When and where did you first see any kind of a telephone?

Ans. In the spring of 1877 in Harrisburg.

Q. 61. Describe what kind of a thing it was.

Ans. It was put up with twine and tin cans and such stuff.

Q. 62. While you lived at Lake Spring farm, and along during the years when you were working and experimenting with your piping, did Mr. Drawbaugh, besides the times when he came there to work on it, ever step in and see how the things were working and talk with you about them?

Ans. I think he did step in as he was passing by occasionally and give me some ideas sometimes.

Q. 63. Did Mr. Drawbaugh ever tell you while you lived in Cumberland county that he had a talking-machine by which conversation could be carried on from one place to another along a wire by means of electricity, and ask you to put money into it to help him patent it?

Ans. He didn't tell me he had any telephone, and he never asked me for any money.

Q. 64. If before electric telephones had been heard of elsewhere he had told you that he had a talking-machine that worked by electricity, and by means of which conversation could be carried on between one place and another along a wire, and had demonstrated to you that he had such a thing in a really successful condition by having you talk and listen through it, and had pointed out to you that there was a fortune in it, and told you that he wanted fifty or a hundred dollars to patent it with, and would give an interest in it to anybody who would furnish the money, would he have had any difficulty in getting the money or a considerable part of it from you?

[*Objected to as hypothetical, argumentative, leading, incompetent, and calling for mere opinion.*]

Ans. Not any.

Cross-examined by Mr. Hill:

Cross-Q. 65. Your cousin, Mr. Henry Herr, is a man of pretty large means, is he not?

Ans. Yes, sir.

Cross-Q. 66, *de bene esse.* He says that Mr. Drawbaugh urged him to take a half interest in the telephone and put some money in it, and that he showed him the machine and tried to get him to listen at it, and told him it was to take the place of the telegraph, but that he declined taking hold of the matter. Now bearing in mind that the great commer-

cial success of the speaking telephone had not then been demonstrated, and that men might well differ in opinion at that time as to whether it would be of much financial value, whether it worked well or not, do you think you would have been any wiser than Mr. Herr was if the matter had been presented to you?

[*Complainants' counsel objects for this reason: That the question calling attention to the time alleged by Mr. Herr should also state what Mr. Herr testified—that the application was made to him during the year when he talked with Drawbaugh about the ram, and that was in* 1869, *according to such recollection as Mr. Herr is able to exercise.*

Respondents' counsel objects to the interruption of the cross-examination and to the interjection of the complainants' arguments therein; and he prefers to have it put as it has been stated on the record.

Complainants' counsel further objects to the question for the reason that it is merely an argument, and does not call upon the witness for any fact within his knowledge.

Respondents' counsel says that this last objection comes with poor grace from the author of direct interrogatory 64.

Complainants' counsel replies that the direct interrogatory referred to called upon the witness to state the condition of his own mind, and that if the long preamble to the cross-interrogatory has any meaning the cross-interrogatory calls upon the witness to compare his mind with the alleged condition of the mind of another.

Respondents' counsel replies that he expects that Court to laugh at both interrogatories, but that he is only following the lead of complainants' counsel; and he now requests the question to be put to the witness.

Ans. I wouldn't know what I would have to do with Mr. Herr's opinion.

Cross-Q. 67, *de bene.* I didn't assume that you would have any thing to do with it, but merely asked if you think you would have been wiser than Mr. Herr was under the same circumstances.

[*Objected to for the reason assigned in the previous objection, and as incompetent.*]

Ans. I don't think that I would have been wiser than him at all, but I think that if it had been showed to me I would have taken hold of it.

Cross-Q. 68. Were you ever at Mr. Herr's place with Mr. Daniel Drawbaugh?

Ans. Not as I know of.

Cross-Q. 69. You never took Mr. Drawbaugh out to Mr. Herr's place, then, to see about the ram?

Ans. I don't remember about it at all, although I might have done so. I might have taken him out from Harrisburg, but I am inclined to think not.

Cross-Q. 70. Mr. Herr does not state positively that you are the man who first mentioned to him the subject of the ram, and of Drawbaugh's putting it in, but only says he thinks you were. He says that "some of his [meaning Drawbaugh's] neighbors had told me about his putting up rams," and that he, Mr. Herr, "went to see Drawbaugh to come over and see whether he had a sufficient supply of water to run the ram," and that "he [meaning Drawbaugh] came over on a Saturday morning; and this neighbor of his who was mentioned a bit ago brought him over." Now, if you didn't take Mr. Drawbaugh over to Mr. Herr's place, then it must have been some other neighbor, and not you who first mentioned the matter to Mr. Herr; must it not?

[*Objected to as not correctly stating the testimony of Mr. Herr, first, because "Harry Neidig, a cousin of mine," was the only neighbor "mentioned;" and second, because in his 46th redirect answer Mr. Herr said that it was Mr. Neidig who first told him about the rams, and that he went to see Mr. Drawbaugh after that, Mr. Herr's language being as follows:*

"*Re-direct-Q.* 46. How long had your cousin had his ram before he told you about it and you got yours?

Ans. I can't say, positive, that he had his ram before I got mine, but he told me first about the rams that were being put up through the neighborhood by Mr. Drawbaugh, and then I concluded that I would go to see him."

[*Respondents' counsel again objects to the repeated interruptions of this cross-examination, and submits that his interrogatory fairly and correctly states Mr. Herr's testimony, as the Court will see by comparing redirect question* 46 *of Mr. Herr's deposition with cross-question* 21 *of the same deposition, which are manifestly to be read together, and that Mr. Herr, in cross-question* 21, *did not say that Harry Neidig had told him about putting up rams, but that "some of his [meaning Drawbaugh's] neighbors" had told him about it, and he thought it was Harry Neidig. And, further, that Mr. Herr, in redirect question* 46, *did not say that Mr. Neidig was the first person who told him about the rams. The plain meaning of his answer was, that the conversation referred to about the rams was before he, Mr. Herr, concluded to go and see Drawbaugh. And counsel apologizes to the Court for being forced into this argument upon the record.*

Complainants' counsel says that by entering his objection upon the record the court has been afforded the means of, and has its attention called to, the necessity of comparing the two passages from Mr. Herr's deposition which are manifestly to be read together, although the one which was the last one given, and in response to a question of defendant's counsel, was omitted from the question.]

Ans. I don't say that I didn't take Mr. Drawbaugh out; but I can't get it into my head that I did; it may be. I swung around a good bit in them days, but I can't remember that I did.

Adjourned until April 21, 1883, at 10, A. M.

APRIL 21, 1883, 10, A. M.

Cross-Q. 71. Do you know when Mr. George Heck died?

Ans. I don't remember the date or time; I remember of him dying; I was at his funeral.

Cross-Q. 72. Wasn't it in July, 1873?

[*Question objected to. If the defendants want to prove the date, they should not prove it by interrogating a witness, whose direct examination did not refer to it, and who testifies that he does not recollect the date.*]

Ans. I don't remember.

Cross-Q. 73. Did you ever know anything about his taking Mr. Drawbaugh out to Mr. Henry Herr's place, to see about putting in the ram?

Ans. I did not.

Cross-Q. 74. In your 33rd and 34th answers, you spoke of a ram on the farm of John Stephens, and that it was put in after yours was put in; how long after yours was put in?

Ans. I don't remember how long.

Cross-Q. 75. What makes you think it was put in after yours was put in?

Ans. I heard them talk about putting one up there afterwards, of a larger size.

Cross-Q. 76. Then you didn't see the ram put in, when it was first put in on Stephens' place, did you?

Ans. No, sir; I don't know how soon I saw it after it was put in; it wasn't a great while, though.

Cross-Q. 77. State, as near as you can, how soon you saw it after your first ram was put in.

Ans. I don't remember at all.

Cross-Q. 78. Have you any idea how long Mr. Drawbaugh and Mr. Sadler had been in the ram business together before they furnished your ram?

Ans. I have not.

Cross-Q. 79. Had you heard of their being in business together, some time before that?

Ans. A short time; I couldn't give you no idea what length of time it was.

Cross-Q. 80. From the fact that your bill of June 10, 1871, is made out in the name of Drawbaugh & Sadler, while that of May 29, 1872, is made out in the name of Daniel Drawbaugh, I should judge that Mr. Sadler had gone out of the business before the bill last mentioned was made; what is your information on that subject?

[*Objected to as argumentative, and for the same reason as stated in the objection to cross-q. 72.*]

Ans. I think he had.

Cross-Q. 81. While you lived on the Lake Spring farm from the spring of 1870 to the spring of 1877, was farming your only business; or were you engaged in other enterprises more or less?

Ans. I was buying and selling a few horses, and I had a dairy on the farm. I don't know whether you would call that other business, or not; it belongs to the farm.

Cross-Q. 82. Where did you generally buy your horses—what part of the country—and what market did you generally sell them in?

Ans. I bought horses in Cumberland, York, and Adams counties, and bought some at Harrisburg. I retailed some around home, and sold some to the New York dealers.

Cross-Q. 83. When did you first engage in the horse business?

Ans. That I can hardly tell you; ever since I was a boy.

Cross-Q. 84. Did you ever devote any attention to electricity, or its practical application in the arts?

Ans. No, sir.

Redirect by Mr. Storrow:

Q. Q. 85. Along about from 1871 to 1875, were you in the habit of meeting Mr. Henry Herr more or less frequently?

Ans. Yes, sir.

Q. Q. 86. Did he ever say anything to you about Drawbaugh's showing him a talking-machine, or having a talking-machine?

[*Objected to as utterly immaterial, and as matter not referred to in the cross-examination.*]

Ans. He never did.

Q. Q. 87. Do you know Ira Kahney and Norman W. Kahney, witnesses who testified for the defendants in this suit?

[*Objected to as new matter not referred to in cross-examination.*]

Ans. I do.

Q. Q. 88. It appears that their father and they most of the time with him, had their home in Milltown, from the spring of 1871 to the spring of 1875, and then moved to a tenant house belonging to Martin Best, near the Gorgas school-house, about a quarter of a mile from Milltown: do you remember the fact of their living at those two places?

[*Same objection.*

Complainants' counsel replies to the objection that it is precisely because the matter is entirely new that it is unobjectionable; and he does not think it worth while to go through the mere form of having the witness sign his deposition and then at once begin a new one.]

Ans. I remember of them living in Mr. Best's house.

Q. Q. 89. Did Ira or Norman work for you while they lived at Best's house, and before you moved away from Lake Spring farm in the spring of 1877; and if so, how much did they work for you?

[*Same objection, and further objected to as irrelevant and immaterial.*]

Ans. They did work for me; both of them. Ira worked for me considerably more than Norman. I think Ira must have worked for me about six months on the farm, off and on; not all the time, but backward and forward.

Q. Q. 90. Did either of them ever say to you that Mr. Drawbaugh had a talking-machine down at his shop, or say anything to you on such a subject?

[*Same objection.*]

Ans. They never did.

Q. Q. 91. After you had the talk with Mr. Herr about the ram, did you mention to Mr. Drawbaugh that Mr. Herr would likely be a customer for a ram? State what your recollection is about that.

[*Objected to as immaterial.*]

Ans. I think I told Mr. Drawbaugh that Mr. Herr would likely buy a ram, providing there was water enough to run the water up the hill. I think I gave him some idea of how the water was, and told him he had better go over and see it.

Examination taken, reduced to writing, and by the witness affirmed and subscribed to before me, this 21st day of April, 1883.

FRED. M. OTT,
Examiner.

H. NEIDIG.

GEORGE W. ROW, *being produced, sworn, and examined, saith:*

Examined by Mr. Storrow:

My age is twenty-three; residence near Eberly's Mills, Cumberland county, Penna; occupation, laborer.

Q. 1. How long have you been living at Eberly's Mill's this last time?

Ans. Since January, 1883.

Q. 2. Where did you live from the time you were born, until the spring of 1876?

Ans. At home, near Eberly's Mills.

Q. 3. Did you know Daniel Drawbaugh while you lived there?

Ans. Yes, sir.

Q. 4. Does your father live in the same place still, and what is his name?

Ans. Yes, sir; Peter M. Row.

Q. 5. In the spring of 1876, did you hire out as hireling to anybody; and if so, to whom?

Ans. Yes, sir; to John Stephens.

Q. 6. Is that the John H. Stephens, who lives at Sporting Hill, Hampden township, on a farm there, near Shiremanstown, and who gave a deposition, defendants' record, page 260?

Ans. Yes, sir.

Q. 7. Did he have a brother by the name of William Stephens?

Ans. Yes, sir.

Q. 8. Do you know whether it was William or John who actually owned the farm?

Ans. William is all I ever heard that owned it.

Q. 9. Did you work as hireling for John Stephens during that whole season of 1876?

Ans. Yes, sir.

Q. 10. Did he have any other man as hireling during that season?

Ans. No, sir.

Q. 11. Was there one of Mr. Drawbaugh's rams on that Stephens farm during that season?

Ans. Yes, sir.

Q. 12. Do you remember Mr. Stephens' going down to Drawbaugh's shop one afternoon or evening during that season to get some part of the ram repaired?

Ans. Yes, sir.

Q. 13. What part of the year was it?

Ans. October.

Q. 14. Did Mr. Stephens the next day mention to you anything he had seen or heard at Mr. Drawbaugh's shop on that visit and ask you any question about it; and if so, what was it?

[*Objected to as immaterial, not in rebuttal, and as calling for hearsay.*]

Ans. Yes, sir; he asked me whether I had heard of Dan Drawbaugh having a talking-machine.

Q. 15. What did you tell him?

[*Same objection.*]

Ans. I told him I hadn't.

Q. 16. And I suppose that was true, that you never had, was it?

[*Objected to as immaterial and not in rebuttal.*]

Ans. Yes, sir.

Q. 17. Did he say anything about how he came to know or suppose that Drawbaugh was working on a talking-machine; and if so, what?

[*Same objection and as calling for hearsay.*]

Ans. Yes, sir; he said Daniel told him.

Q. 18. Did he say when Daniel told him, or when he first knew of it; and what did he say about that?

[*Same objection.*]

Ans. Yes, sir; he said Daniel told him that night he was down.

Q. 19. Did he describe to you what kind of a thing this machine was?

[*Same objection.*]

Ans. Yes, sir.

Q. 20. What did he say about it?

[*Same objection.*]

Ans. He said it was a talking-machine to talk from one place to another by a wire.

Q. 21. Did he describe to you what sort of a looking thing it was, or what it was made of, or how it was made?

[*Same objection.*]

Ans. No, sir.

Q. 22. What sort of work were you doing when Mr. Stephens had that conversation with you?

[*Objected to as immaterial and not in rebuttal.*]

Ans. Husking corn.

Q. 23. Was anybody else working with you at that time; and if so, who?

[*Same objection.*]

Ans. Yes, sir; David Wolferd.

Q. 24. Was he a regular hired man on the place, or how did he happen to be there at that time?

[*Same objection.*]

Ans. No, sir; William Stephens sent him there.

Q. 25. Did anybody go over with Stephens to Drawbaugh's the night before when he took over the piece of ram to be repaired; and if so, who went with him?

[*Same objection.*]

Ans. Yes, sir; David Wolferd.

Q. 26. Do you know where Daniel Wolferd is now, or whether he is living?

[*Same objection.*]

Ans. No, sir.

Q. 27. Did you ever work for John Stephens any other time except that season of 1876?

[*Same objection.*]

Ans. No, sir.

Q. 28. Since you left Eberly's Mills to work for Stephens in 1876, have you ever lived there again until you moved back this year?

[*Same objection.*]

Ans. No, sir.

Q. 29. Has Mr. Drawbaugh ever spoken to you with reference to the matter you have been testifying about; and if so, when and where?

[*Same objection.*]

Ans. Yes, sir; about half way from Shiremanstown to Mechanicsburg, on the road leading from the State road to the Simpson; it was in January, 1881.

Q. 30. How did he happen to meet you there?

[*Same objection.*]

Ans. I was on my road to my father-in-law's, at Carlisle; I was driving in a sleigh. He was driving along and met me.

Q. 31. Did he stop you and get out of his sleigh, or how did you have your talk?

[*Same objection.*]

Ans. He drove past me and then hollered after me and came back and stopped me.

Q. 32. When he came up to your sleigh and talked to you, what did he ask you; what did he say to you and what did you say to him?

[*Same objection.*]

Ans. He asked me whether I remembered the year I worked for John Stephens, and whether I was with him at the shop; I told him that it was in 1876 that I had worked for him, but never was with him to the shop.

Q. 33. Did he say why he came to you to ask you about that instead of taking it from Mr. Stephens?

[*Same objection.*]

Ans. Yes, sir; he thought I would remember the date better than Mr. Stephens told him.

Q. 34. Did he say anything about Mr. Stephens having referred him to you or mentioned your name to him; and if so, what?

[*Same objection.*]

Ans. Yes, sir; he told me that Mr. Stephens said he thought that I was with him to the shop.

Q. 35. Was Mr. Drawbaugh alone in the sleigh?

[*Same objection.*]

Ans. No, sir.

Q. 36. Did the others who were with Mr. Drawbaugh in the sleigh take part in the conversation, or were they near enough to hear what you and Mr. Drawbaugh said?

[*Same objection.*]

Ans. No, sir.

Q. 37. Did you see them well enough to recognize them or know who they were?

[*Same objection.*]

Ans. No, sir.

Q. 38. How far do they call it from Mr. Stephens' farm to Drawbaugh's shop at Eberly's Mills?

[*Same objection.*]

Ans. About four miles.

Q. 39 Was Mr. Stephens in the habit of going there as often as every other day and sometimes twice a day during the season that you lived with him?

[*Same objection.*]

Ans. No, sir.

Cross-examined by Mr. Hill, de bene esse.

Cross-Q. 40. How often has John Comfort been to see you about this case?

Ans. Twice.

Cross-Q. 41. When and where?

Ans. He was to see me once at my home near Eberly's Mills, and once at my work near Bridgeport, in March, 1883.

Cross-Q. 42. Were both visits in March, 1883?

Ans. Yes, sir.

Cross-Q. 43. How much money have you received for your services in this case so far?

Ans. Seventeen dollars.

Cross-Q. 44. How much more are you to get for your services in this case?

Ans. I don't know.

Cross-Q. 45. Have you heard it reported around that the witnesses for the Bell Telephone Company are well paid for their services in this case, or did Mr. Comfort say anything about that?

[*Complainants' counsel objects to the attempt to introduce into the record re-*

ports purposely and maliciously started and circulated by Mr. Drawbaugh and his party.

Respondents' counsel objects to the statement contained in the objection just put on the record as utterly unfounded in fact, and itself a purposed and malicious libel upon Mr. Drawbaugh and his party.]

Ans. No, sir.

Cross-Q. 46. Did Mr. Comfort say anything about how well you would be paid for coming down here?

Ans. No more than he said he would pay me for my time, and my expenses would be kept clear.

Cross-Q. 47. Didn't he say that they paid well for such services?

Ans. No, sir.

Cross-Q. 48. When and for whom were you working last before you came down here to testify?

Ans. Near Bridgeport, for Harry Whitman.

Cross-Q. 49. What were you doing for him?

Ans. Quarrying stone.

Cross-Q. 50. What wages were you getting?

Ans. Twelve and a half cents per hour.

Cross-Q. 51. When did you last work at farming, and for whom and where?

Ans. In 1881, at Carlisle, for George Simons.

Cross-Q. 52. What were you doing in the spring, summer, and fall of 1875?

Ans. I was living near Eberly's Mills, working among the farmers by the day, and doing a little hauling.

Cross-Q. 53. Mention all the farmers that you ever worked for in 1875.

Ans. Fred. Sheely and David Ditlow.

Cross-Q. 54. Tell us how much work you did for each of them, and what you hauled.

Ans. I don't remember how much I done for either one of them; I used to haul coal and cooper stuff for Milltown I hauled cooper stuff for Emanuel Dietz.

Cross-Q. 55. When did you haul cooper stuff for Emanuel Dietz?

Ans. I don't remember what part of the year; the last I hauled was in 1875.

Cross-Q. 56. What were you doing in the spring, summer, and fall of 1878?

Ans. Working on a farm.

Cross-Q. 57. Whose farm and where?

Ans. A mile above Camp Hill, for Samuel Musselman.

Cross-Q. 58. How long did you work for him in that year?

Ans. I worked for him three years.

Cross-Q. 59. What three years?

Ans. 1877, 1878, and 1879.

Cross-Q. 60. You say that from the time you were born until the spring of 1876 you lived at home near Eberly's Mills. How near Eberly's Mills?

Ans. About a fourth of a mile, to the best of my knowledge.

Cross-Q. 61. In what direction from Eberly's Mills, and on what road?

Ans. On the road leading from Eberly's Mills to White Hill, north of Eberly's Mills.

Cross-Q. 62. When did you last go to school, and where?

Ans. At Gorgas' school-house; but I don't remember what year I quit going to school.

Cross-Q. 63. Did you quit going to school before you worked for Mr. Stephens?

Ans. Yes, sir.

Cross-Q. 64. Did you quit going to school before you worked for those farmers in 1875?

Ans. I don't remember whether I went to school that winter or not; I rather think I went part of the time.

Cross-Q. 65. When you went to school did you go always at the Gorgas school-house?

Ans. Yes, sir.

Cross-Q. 66. How do you know it was 1876 that you worked for Mr. Stephens?

Ans. Because my mother died in 1875 and I left home in the following spring of 1876.

Corss-Q. 67. What time in 1875 did she die?

Ans. May 10th.

Cross-Q. 68. What was her full name, and where was she buried?

Ans. Anna Row, buried in Eberly's Mills grave-yard.

(Recess until 3, P. M.)

Cross-Q. 69. Referring to that conversation that you say you had

with Mr. Stephens, was that the only time that you ever heard Mr. Stephens mention Drawbaugh's talking-machine?

Ans. Yes, sir.

Cross-Q. 70. What time of day was that conversation?

Ans. I don't remember.

Cross-Q. 71. Where was it?

Ans. In the cornfield.

Cross-Q. 72. What cornfield—where was the cornfield?

Ans. Right along the turnpike, east of the barn.

Cross-Q. 73. Who was present?

Ans. David Wolferd.

Cross-Q. 74. Anybody else besides yourself, Stephens, and Wolferd?

Ans. No, sir.

Cross-Q. 75. Do you remember the whole of the conversation about Drawbaugh's talking-machine?

Ans. All I heard was that Daniel told him he was making a talking-machine to talk from one place to another by a wire.

Cross-Q. 76. That's all that Mr. Stephens told you about it, was it?

Ans. Yes, sir.

Cross-Q. 77. You are sure that Mr. Stephens didn't say anything else about it, are you?

Ans. He didn't say anything else about it more than ask me whether I ever heard anything about it before.

Cross-Q. 78. Now, just give the whole conversation, just exactly as you remember it, so far as it had any relation at all to Drawbaugh's talking-machine. Tell us how the conversation began, what was said in it, and how it ended.

Ans. The first he asked me whether I had heard about Dan Drawbaugh's talking-machine; I told him I didn't. Then he said that Dan had told him last evening that he was making a talking-machine, to talk from one place to another by a wire. That was all that was said about it; if anything else was said about it I don't remember.

Cross-Q. 79. He didn't say that he had seen Drawbaugh's talking-machine the evening before, did he?

Ans. No, sir.

Cross-Q. 80. He didn't say whether he had or had not seen Drawbaugh's talking-machine long before that time, did he?

Ans. No, sir.

Cross-Q. 81. He didn't say whether that was the first talking-ma-

chine that Drawbaugh had made, or whether Drawbaugh had made a number of others before that; did he?

Ans. No, sir.

Cross-Q. 82. He didn't say whether that was the first time that Drawbaugh had spoken to him about the talking-machine, or whether Drawbaugh had spoken to him long before that; did he?

Ans. No, sir.

Redirect by Mr. Storrow:

Q. Q. 83. He didn't say to you that he had known of Drawbaugh's having it a great many years and wondered that you hadn't heard of it; did he?

Ans. No, sir.

Q. Q. 84. What day this week did you reach here?

Ans. Tuesday morning.

Q. Q. 85. And to-day is Saturday, is it not?

Ans. Yes, sir.

Examination taken, reduced to writing, and by the witness sworn to and subscribed before me this 21st day of April, A. D. 1883.

FRED. M. OTT,
Examiner.

GEO. W. ROW.

Adjourned until April 23, 1883, at ten, A. M.

APRIL 23, 1883, 10, A. M.

Examination resumed.

Mrs. GEORGE W. BOYER, *being produced, sworn and examined, saith:*

Examined by Mr. Storrow:

I live about two miles and a half above Fairview, Cumberland county, Pennsylvania, on the river road.

Q. 1. Do you know Cyrus Kissinger, and is his wife your daughter?

Ans. Yes, sir.

Q. 2. It appears that he was married to her July 14, 1878, and that they did not go to housekeeping until the fall, when they moved on to an island known as Sheets's island, which your husband farmed; do you recollect those facts?

[*Respondents' counsel objects to this mode of examination by suggesting to the witness what other witnesses have stated, on the ground that it is leading.*].

[*The witness had answered the question before the objection was made.*]

Ans. Yes, sir.

Q. 3. Do you remember where Cyrus and your daughter were living on Thanksgiving day of that year; and if so, where?

Ans. On that island.

Q. 4. Where were you on Thanksgiving day of that year?

Ans. At Fairview, helping to butcher.

Q. 5. At whose house?

Ans. At my brother-in-law's, Philip Boyer's.

Q. 6. Do you remember any occurrence that day that fixes it in your mind that Cyrus and your daughter were then living on the island?

Ans. Yes, sir; they were out and there came up a storm, and they stopped on a grass-patch awhile.

Q. 7. Do you mean out on the river crossing?

Ans. Yes, sir; they were going in on the island again.

Q. 8. Had they been living on the island a long time, or a short time before Thanksgiving day?

Ans. Just a short time before that.

Q. 9. Where did your daughter live, and where did Cyrus live between the time when they were married and the time when they began to keep house on the island?

Ans. She was at home with me, and he was up with his parents.

Q. 10. Did she make a visit up there at his parents' any time that summer or fall?

Ans. Yes, sir; I think about the time peaches were ripe she was up there a couple of weeks.

Q. 11. Do you remember anything of Cyrus' stopping at your house that fall on his way up from Drawbaugh's shop to his father's house while your daughter was living with you?

[*Respondents' counsel says that as the time of that alleged occurrence is the only material thing connected with it, he objects to the question assuming the time and thereby leading the witness.*]

Ans. Yes, sir.

Q. 12. What did he stop for?

Ans. For him to warm himself; and we fed his horse and give him something to eat.

Q. 13. Was it a cold day or not?

Ans. It wasn't very cold in the morning, but it blew up cold before he came back; he had no overcoat on, and was most froze.

Q. 14. Who fed his horse?

Ans. His wife gave him corn in the half-bushel; he didn't unhitch him.

Q. 15. Did you go down to the wagon and look in it, before he drove away?

Ans. Yes, sir.

Q. 16. Did he, while he stopped there, tell you where he had been, and what he had been for?

[*Objected to as calling for hearsay.*]

Ans. Yes, sir; he had been over to Drawbaugh's for a ram.

Q. 17. When you looked into the wagon, what did you see there?

Ans. I saw the ram, and some tools in the wagon.

Q. 18. Had Cyrus been in the habit of calling on your daughter as much as a year before that?

[*Objected to as leading.*]

Ans. Not quite a year, I guess, before that.

Q. 19. You have testified that your daughter made a visit up to Mr. Kissinger's for about two weeks during peach season, after she was married and before they went to housekeeping on the island; did you go up there while she was making that visit?

Ans. Yes, sir.

Q. 20. Was there a ram in there at Mr. Kissinger's place to force water up to the house, or how did they get the water to use at the house at that time?

Ans. There was no ram; they carried it up; I went with them down to fetch some up.

Q. 21. Did you go to Mr. George Kissinger's house again the following spring or summer; and if so, in what season?

Ans. Yes, sir; I was up in June, the time early cherries was just commencing to get ripe.

Q. 22. Was there a ram in then to throw water up to the house?

Ans. Yes, sir.

Q. 23. When Cyrus and your daughter left the island, where did they move to?

Ans. Fairview.

Q. 24. To whose house?

Ans. My brother-in-law's, Philip Boyer's.

Q. 25. Do you remember what kind of weather it was the day they moved?

Ans. It was cold and rough—a snowstorm; it rained in the evening late.

Q. 26. What was Cyrus working at when they moved?

Ans. He was working on the railroad track.

Q. 27. Had he been working on the railroad track before they moved, or did he begin at the time they moved?

Ans. He was working before, a good while.

Q. 28. Where did he live while he was working on the railroad track, before he moved?

Ans. On the island.

Q. 29. Do you mean that he went back and forward to his work every day from the island?

Ans. Yes, sir.

Cross-examined by Mr. Hill:

Cross-Q. 30. When and where did you first become acquainted with Cyrus Kissinger?

Ans. Where we live now; we had parties there, and he came back and forward to parties that we had; that was how we got acquainted with him; this was the winter before he was married.

Cross-Q. 31. How long have you lived where you do now?

Ans. Eighteen years this spring.

Cross-Q. 32. What year was it that you were up at Mr. George Kissinger's place in cherry time?

Ans. It was in 1879; they were married in 1878.

Cross-Q. 33. Where were they getting their water for household purposes?

Ans. In 1879 the ram was running and they got their water from it; it wasn't running all the time; they stopped it off still.

Cross-Q. 34. Where did the ram discharge water?

Ans. About thirty feet from the house into a barrel they had there.

Cross-Q. 35. How many times were you up to Mr. Kissinger's place while he lived there on Draper's farm?

Ans. Only twice.

Cross-Q. 36. When you were up there the first time didn't they get any water in the yard or about the house without going to the spring?

Ans. No, sir.

Cross-Q. 37. On that first visit did you hear anything said about a ram?

Ans. No, sir; I don't remember of anything.

Cross-Q. 38. Was that first visit along about the first of September?

Ans. I guess it was; peaches were ripe; it was along about that time.

Cross-Q. 39. Had the observatory been put on the house before that time?

Ans. I don't know anything about that.

Cross-Q. 40. How long were you there on that first visit?

Ans. I went there in the forenoon and went away in the evening.

Cross-Q. 41. How long were you there on your second visit?

Ans. The same length of time.

Cross-Q. 42. When you were there on the first visit I understand you helped the family to get water from the spring, or went down to the spring with them, did you?

Ans. Yes, sir.

Cross-Q. 43. Did you get water out of the spring itself, or from some place below the spring?

Ans. We got it out of the spring.

Cross-Q. 44. Did you see any pipes about the spring, or the end of any wooden or iron pipe at the spring?

Ans. No, sir.

Cross-Q. 45. If there had been any pipe there with its end at the spring, do you think you would have seen it and remembered it or not?

Ans. I didn't see nothing of any of it.

Cross-Q. 46. Do you think you would have seen it and remembered it if there had been any there?

Ans. Yes, sir, if I would have saw it.

Cross-Q. 47. How far did you live from Mr. Kissinger's house then?

Ans. About three miles and a half.

Redirect by Mr. Storrow:

Q. 48. Do you remember whether the down-hill edge of the spring, on the side towards the house, was partly built over with stones and boards, so as to cover the outlet of the spring where the water flowed away, and so that a person could stand there and dip out water from the deep part of the spring?

Ans. I don't recollect whether it was boards or stones; but I know we

dipped the water out of the deep part; I don't know what it was covered with; that I can't recollect.

Examination taken, reduced to writing, and by the witness sworn and subscribed to, before me this 23d day of April, 1883.

FRED. M. OTT,
Examiner.

A. J. BOYER.

GEORGE W. BOYER, *being produced, affirmed, and examined, saith:*

Examined by M. Storrow:

My age is forty-nine; residence, East Pennsboro township, Cumberland county, Penna; occupation, farmer.

Q. 1. Have you been present during the deposition just given by your wife?

Ans. Yes, sir.

Q. 2. It appears from Cyrus Kissinger's marriage certificate and otherwise, that he was married to your daughter July 14, 1878; did they go to housekeeping immediately after they were married?

Ans. No, sir.

Q. 3. Where did they first begin housekeeping?

Ans. On the island.

Q. 4. Do you remember where they were living the first Thanksgiving day after they were married; that is, in the fall of 1878?

Ans. Yes, sir; they lived on the island.

Q. 5. What were you doing that Thanksgiving day?

Ans. Butchering for my brother in Fairview.

Q. 6. Did Cyrus and his wife come over that day?

Ans. Yes, sir; they were over and home, and had left before I got home from Fairview.

Q. 7. Had they lived on the island, a long time or a short time, before that Thanksgiving day?

Ans. Not so very long before.

Q. 8. Where did Cyrus live and where did your daughter live between the time when they were married and the time when they began housekeeping on the island?

Ans. She lived at home, and he lived at his home.

Q. 9. Did she make any visit up to his father's during that time?

Ans. Yes, sir; she was up there about two weeks, I guess.

Q. 10. What part of the season was that?

Ans. Early peaches was ripe.

Q. 11. Your wife has testified that Cyrus came to the house and got something for his horse and himself to eat on his way up from Drawbaugh's shop after he was married and while his wife was living at your house; were you at home, and did you see him on that occasion?

Ans. No, sir; I did not see him; I was not at home; I was on the island husking corn.

Q. 12. Did you hear about that visit at the time and on the same day; and if so, what did you hear of it?

[*Objected to as calling for hearsay.*]

Ans. When we came home that evening, they told us that Cyrus was there, and had been over to Drawbaugh's and had fetched the ram.

Q. 13. When Cyrus and his wife moved away from the island where did they move to?

Ans. They moved to Fairview in my brother's house.

Q. 14. If there is any circumstance which enables you to fix about when it was when they moved, please state it.

Ans. It was about the middle of March, I guess, when they moved, because I broke my leg on the 26th of February, and just could get out a little when he moved.

Q. 15. Were you able enough to help him move?

Ans. No, sir.

Q. 16. Where was he working at the time he moved, and how long had he been working there?

Ans. He was working on the railroad then, and I think he had commenced in September to work on the track.

Q. 17. Where did he himself live from the time when he commenced to work on the track till he moved his family from the island to Fairview?

Ans. He lived on the island.

Q. 18. After the time when you heard that Cyrus had stopped at your house on his road from Drawbaugh's with the ram, did you know anything about Drawbaugh's going up to Kissinger's; and if so, what?

(*Objected to if the information is derived from the statements of others on the ground that it is mere hearsay and incompetent.*)

Ans. Yes, sir; I went to the island, it might have been a week or

so afterwards, and I met Mr. Drawbaugh on the road as we went down; and when I came home Maggie told me that Mr. Kissinger had been down for Mr. Drawbaugh to put in the ram.

Q. 19. Which Mr. Kissinger?

[*Same objection.*]

Ans. The old man.

Q. 20. Whom do you mean by Maggie?

Ans. My daughter, Cyrus' wife.

Q. 21. You have stated that your daughter made a visit to Mr. George Kissinger in the peach season of 1878 after she was married; did you and your wife go up there then?

Ans. Yes, sir.

Q. 22. At the time of that visit that you and your wife made was there a ram at Mr. Kissinger's to throw water from the spring up to the house?

[*Objected to as leading.*]

Ans. No, sir.

Q. 23. During that visit was anything said with reference to a ram; and if so, what?

[*Objected to as calling for hearsay.*]

[*Complainants' counsel calls attention to the fact that the question is the same as that put to Mrs. Boyer on cross-examination.*

Respondents' counsel says that it nevertheless calls for hearsay; that while it might be proper in connection with cross-examination, it is certainly improper and incompetent on examination-in-chief.

Complainants' counsel says that evidence in its nature incompetent, is always incompetent; that the conversation asked for is not mere hearsay, but part of the res gestæ, because the fact that such statements were or were not made at the time, tends to prove the condition of facts at the time; and also tends to meet any inference which might be drawn, either way, from Mrs. Boyer's cross-examination on that topic.]

Ans. Yes; they told me they were going to get a ram put in.

Q. 24. At that visit, was anything said about pipe for the ram; and if so, what?

[*Same objection.*]

Ans. Yes, sir; they told me the pipe was in the ware-house then; but two or three weeks afterwards I was going to Dauphin, and I seen the pipe in the ware-house.

Q. 25. Did you go to Mr. George Kissinger's with your wife the following year, that is, 1879; and if so, what part of the season was it?

Ans. The early cherries was just beginning to get ripe.

Q. 26. Was there a ram in then to throw water up to the house?

Ans. Yes, sir.

Q. 27. Did you see the ram working?

Ans. Yes, sir; they started it to show me how it worked.

(Recess until 3, P. M.)

Cross-examined by Mr. Hill:

Cross-Q. 28. When did you first know George W. Kissinger?

Ans. I can hardly tell you in what year; it was a good while before that that I knowed the old man.

Cross-Q. 29. Was he living on the Draper place when you first knew him?

Ans. No, sir.

Cross-Q. 30. When did you first hear him say anything about putting a ram in on that farm?

Ans. When I was up there the first time I was there.

Cross-Q. 31. When was that?

Ans. It was in the fall of 1878 when peaches was ripe.

Cross-Q. 32. You were never up there before, were you?

Ans. Not at Kissinger's; I was there before they lived there.

Cross-Q. 33. Did you go down to the spring on that occasion, when you were there in the fall of 1878?

Ans. I can't just say if I was at the spring; I was at the barn, and that is just alongside of the spring, a little below it.

Cross-Q. 34. Tell us all Mr. Kissinger said about the ram when you were there on that visit.

Ans. He said they were going to put one in that fall yet.

Cross-Q. 35. Did he tell you how many years they had been talking about putting one in?

Ans. Not that I know of.

Cross-Q. 36. Was that all he said about it—that they were going to put one in that fall?

Ans. He said the pipe was up in the warehouse.

Cross-Q. 37. What warehouse?

Ans. Pennsylvania and Northern Central railroads together.

Cross-Q. 38. When you were at the warehouse two or three weeks afterwards, who was with you?

Ans. I was there by myself.

Cross-Q. 39. You mean nobody was with you, do you?

Ans. I mean nobody was there but the men about the warehouse; I was going over to Dauphin, and I had to wait there until the train come, to go across.

Cross-Q. 40. Give the names of the men you refer to as the men about the warehouse.

Ans. Old Daddy Geib, young Sammy Geib, Mr. Rhoads who tends to the warehouse; that is all that I know of.

Cross-Q. 41. You saw some pipe there in the warehouse, did you?

Ans. Yes, sir.

Cross-Q. 42. How did you know it was for George Kissinger's ram?

Ans. Rhoads told me it was for him.

Cross-Q. 43. How large was the pipe?

Ans. I can't tell you how large it was. It might have been inch pipe, or it might have been inch and a half for what I know; I didn't measure it.

Cross-Q. 44. How did Rhoads know it was for Kissinger?

Ans. He ought to know when he took the freight in—all that come there; he ought to certainly know who it went to.

Cross-Q. 45. Did you see Kissinger's name on the pipe or tags?

Ans. I didn't look.

Cross-Q. 46. What did you go to Dauphin for on that occasion?

Ans. I went over to my brother-in-law's.

Cross-Q. 47. Did you transact any business at Dauphin that day: if so, what?

Ans. Yes, sir; I went over to my brother-in-law's to pay him for some seed wheat I had got from him.

Cross-Q. 48. What is his name?

Ans. William McGonnell.

Examination taken, reduced to writing, and by the witness affirmed and subscribed to before me this 23rd day of April, 1883.

F. M. OTT,
Examiner.

G. N. BOYER.

Adjourned until April 24, 1883, at ten, A. M.

APRIL 24, 1883, 10, A. M.

Adjourned until April 27, 1883, at ten, A. M.

APRIL 27, 1883, 10, A. M.

Examination resumed.

Present, Mr. Storrow for complainants, and Mr. Hill for respondents.

FREDERICK U. WORLEY, *being produced, affirmed, and examined, saith*:

Examined by Mr. Storrow:

My age is fifty-one. Residence, 107 Paxton street, Harrisburg, Pennsylvania. Occupation, teaching.

Q. 1. How long have you lived in Harrisburg?

Ans. I was born there and raised there, but have not resided there my whole lifetime.

Q. 2. An article entitled "The Great Magnetic Clock," and signed "Observers," was published in the *Harrisburg Telegraph*, February 13, 1878, and is printed in the moving papers in this case, page 181. Did you write that article? The article is as follows:

(From the *Harrisburg Telegraph*, February 13, 1878.)

THE GREAT MAGNETIC CLOCK.

At Milltown, one mile from White Hill station, on the Cumberland Valley railroad, can be seen one of the most finished and unique clocks ever constructed by mechanical genius. It was invented and built by Mr. Daniel Drawbaugh, who, although rather unused to the technical names of the schools, is deeply versed in nature's secret workings. His invention is not the result of blind groping in the dark and accidental stumbling upon a new application of power, but the triumph of systematic research, patient investigation, and remarkable mechanical skill. The magnetism of the earth, an inexhaustible source of power, is made to oscillate the pendulum; and the simplicity of all the works gives an assurance of the least possible friction. At a certain point the movements of the pendulum itself shut off magnetic connection with the earth, and at another point restore the connection, thus securing by its own movements the conditions necessary to produce its oscillations. The work is so ingenious and simple, that it is no wild assertion to make, that were it not for the unavoidable wearing out caused by even the smallest amount of friction, the clock would run as long as the solid earth endures. This clock is hung against a board partition, with all the works exposed, subject to all the jarring of the machinery in the shop and obstructions from dust settling upon it; yet, since March 1, 1877, it has been running continuously and uniformly with only slight and repeated variations, as tested by transit observations at noon. Mr.

Drawbaugh, in building clocks, has frequent use for a gear-cutter, a machine costing six to seven hundred dollars. He invented and made a gear-cutting attachment for ordinary lathes, by which common and bevel gearing can be cut better than by the old machine, and which costs but from sixty to seventy dollars. He desires to make a clock for the capitol dome. Is it not the duty of the State, as far as in its power lies, to encourage and develop the mechanical genius of its sons? No cheaper nor more efficient clock can be placed there. The Legislature should apply for the appointment of competent persons to examine Mr. Drawbaugh's claims, and if his clock is found to be what is claimed for it, make the necessary appropriation for placing one in the dome. They will thus secure a lasting ornament, an object of great scientific interest, and a much needed convenience to the capitol building. Surely a small appropriation for this purpose will be approved by every right-minded citizen, since it secures at once an enduring evidence of the State's fostering care of mechanical skill and inventive genius, and places in a prominent position one of the highest scientific and mechanical achievements of this age, won by a toiling son of the Commonwealth. OBSERVERS.

Ans. I did.

Q. 3. Before you wrote it did you go to Mr. Drawbaugh's shop and see the clock and the gear-cutter there referred to?

Ans. I went to Mr. Drawbaugh's shop and saw the clock and the gear-cutter on the Saturday previous to the publication of the article.

Q. 4. Had you known Mr. Drawbaugh personally before that visit?

Ans. I never was acquainted with Mr. Drawbaugh personally previous to that visit.

Q. 5. Had you heard of him before that visit; and, if so, from whom particularly?

[*Objected to as immaterial.*]

Ans. I had heard of him before that visit from Mr. Isaac Lloyd, a friend of mine.

Q. 6. How long had you known Mr. Lloyd, and had you known him intimately?

[*Same objection.*]

Ans. I had known him intimately for about twenty years.

Q. 7. Who went over with you on that visit?

Ans. Mr. Isaac Lloyd.

Q. 8. What led you to go over there on that visit?

[*Objected to as immaterial and incompetent.*]

Ans. I had heard and read about Mr. Drawbaugh's clock, and went especially to see it.

Q. 9. Had Mr. Lloyd, before that visit, spoken to you of Mr. Drawbaugh as an inventor, or mentioned any inventions said to have been made by him; and, if so, what inventions?

[*Same objection.*]

Ans. He had often spoken to me of Mr. Daniel Drawbaugh as a great mechanical genius, and had mentioned among his inventions an atmospheric or hydraulic churn, and an automatic feeder for nail machines.

Q. 10. How did you and Mr. Lloyd go over to Mr. Drawbaugh's shop on that visit?

Ans. Took the cars to White Hall, and walked from there to Dan's shop at Milltown.

Q. 11. Was it in the forenoon or afternoon that you went over there?

Ans. Forenoon.

Q. 12. How long did you stay there and how did you come back?

Ans. We stayed there about three hours—till about twelve o'clock; we missed the train and walked the whole way home.

Q. 13. Is there any circumstance which fixes it in your mind that you stayed at his shop up to about noon; if so, what is it?

Ans. He invited us to stay and take dinner with him—"pot luck," as he expressed it; we did not stay.

Q. 14. While you were there on that visit, did he show to you and explain to you the magnetic clock?

Ans. He showed me a magnetic clock hanging against a board partition, and explained it very fully.

Q. 15. At that visit, did he show to you or explain to you any other machines or contrivances which he said he had got up; and if so, what omitting for the present any reference to the telephone, which I will ask you about in another question?

[*Objected to as immaterial and irrelevant.*]

Ans. He showed us a very large number of machines, among these a patent gear-cutter, a new hydraulic ram, a wooden model of a machine for cutting and folding paper bags, a machine for cutting a square countersink for the head of a round bolt.

Q. 16. Did you see anything of a stamp-canceller there?

[*Same objection.*]

Ans. He showed us a little device for the effective cancellation of postage stamps.

Q. 17. Did he say anything to you about a telephone or talking-machine; and if so, what?

Ans. In speaking of the applications of magnetism—he was experimenting for the transmission of sound, but, while he could produce sound, it was indistinct and confused, and he thought of remedying that by receiving the sound in a box to which he could apply the ear.

Q. 18. At the time of that visit had you read of electric speaking-telephones, and of their general use, in the papers?

Ans. I had.

Q. 19. At that visit did Mr. Drawbaugh say to you in terms, or in substance, or convey to you the idea, that he had made an electric speaking-telephone long before anybody else had?

[*Objected to as leading, and as immaterial and incompetent.*]

Ans. He did not.

Q. 20. If he had at that visit made any such claim, or put forward any such idea, would you or would you not have mentioned it in your newspaper article?

[*Objected to as hypothetical, calling for mere opinion, incompetent, and immaterial.*]

Ans. I would have considered it of such great importance that I would undoubtedly have mentioned it.

Q. 21. Was the fact that you intended to write a newspaper article about him mentioned to him at that visit?

[*Objected to immaterial, irrelevant, and leading.*]

Ans. It was so mentioned by Mr. Lloyd.

Q. 22. Up to the time of that visit, had you or had you not ever heard that Drawbaugh had done anything about a talking-machine?

[*Objected to as immaterial.*]

Ans. I had never heard that Mr. Drawbaugh had done anything in that direction.

Q. 23. Your article speaks pretty highly of what he had done about the clock. Was it or was it not your understanding at the time that he was the first who had made a magnetic clock run by electricity from the earth?

[*Objected to as immaterial, irrelevant, and incompetent.*]

Ans. I most certainly understood Mr. Drawbaugh claimed to be the original inventor of that magnetic clock.

Q. 24. I think your answer, especially taken in connection with your article, is clear enough; but, in order that there may be no doubt about your meaning, I ask you whether you so understood that he was the first who had invented *any* magnetic clock run by electricity from the earth and without other power, or whether you understood that others had previously invented magnetic clocks run by electricity from the earth, and he had merely invented some mechanical improvements in them?

[*Same objection, and further objected to as leading.*]

Ans. I understood that Mr. Drawbaugh had invented that clock, and that that clock was the first one that had ever been run by electricity.

Q. 25. Your article says that his clock had been tested by transit observations at noon; did you, at that visit, see a transit at his shop, and, if so, where; and did he tell you whether he had made it or not?

[*Objected to as immaterial and irrelevant.*]

Ans. There was a transit in the same room in which the clock was placed. Mr. Drawbaugh said he had made observations at noon, but I did not understand him to say he had made the transit.

Q. 26. Had you or had you not ever been at his shop before that visit?

Ans. I had never been there before.

Q. 27. Have you or have you not ever been there since?

Ans. I have never been there since.

Cross-examined by Mr. Hill, de bene esse.

Cross-Q. 28. Referring to such conversation as you had there with Mr. Drawbaugh at that time respecting telephones—how long did that part of the conversation last?

Ans. My impression is, that it was very brief; most of our time was taken up in talking of the clock and other machines through the mill.

Cross-Q. 29. In what part of the shop did that talk about telephones occur?

Ans. In the room where the transit and clock were.

Cross-Q. 30. Did Mr. Drawbaugh exhibit any telephones?

Ans. He showed us nothing in regard to telephones.

Cross-Q. 31. State just how the talk about telephones began.

Ans. I can't tell exactly, except that we were discussing the other uses to which electricity might be applied, besides this time-piece that he had there.

Cross-Q. 32. Can you give, in Mr. Drawbaugh's exact words, all that he said about the telephone?

Ans. I can't give all his exact words; I cannot.

Cross-Q. 33. Can you give any statement that he made about it, in the exact words that he used?

Ans. No, sir.

Cross-Q. 34. Did he tell you that he was experimenting then on telephones, or that he had been experimenting on them prior to that time?

Ans. He said he had been and was then experimenting.

Cross-Q. 35. Did he tell you how long he had been experimenting on them?

Ans. No, sir.

Cross-Q. 36. Did he tell you how many telephone instruments he had made up to that time?

Ans. No, sir; the time was too short.

Cross-Q. 37. Did he tell you that his telephone instruments had ever been talked through?

Ans. He said sound had been transmitted by them.

Cross-Q. 38. Did he tell you that articulate speech had been transmitted by them?

Ans. No, sir.

Cross-Q. 39. Did he tell you that articulate speech had not been transmitted by them?

Ans. He said that indistinct and confused sounds had been transmitted by them.

Cross-Q. 40. Was that all that he said about the quality of their transmission?

Ans. He spoke of a plan for obviating the difficulty.

Cross-Q. 41. Tell us all he said about telephones—everything that you can remember.

Ans. The substance of all I can remember is this: He had succeeded in transmitting sound, but when it was received in an open room, the reverberations made the sound confused and indistinct. He proposed to remedy that by receiving the sound in a small chamber or box, to which the ear could be applied.

Cross-Q. 42. That last answer states all that you remember that he said about telephones; does it?

Ans. Yes, sir; all that I distinctly remember—that I would be willing to state as fact.

Cross-Q. 43. The subject of Bell's, or Edison's or Gray's, or other telephones, was not mentioned in that controversy, was it?

Ans. Not to my knowledge; I was not present during the whole conversation between Mr. Lloyd and Mr. Drawbaugh; I went into another room part of the time.

Cross-Q. 44. Then the question of priority of invention was not alluded to, so far as you know, was it?

Ans. It was not.

Cross-Q. 45. Did you go into the other room during the talk about telephones; or was it before that part of the talk began, or after it was finished, that you went into the other room?

Ans. I went into the other room after I had heard what I mentioned before. Mr. Lloyd and Mr. Drawbaugh, according to my impressions, were still conversing on the subject when I went into the other room.

Cross-Q. 46. How long did you stay in the other room before you returned to Mr. Lloyd and Mr. Drawbaugh?

Ans. I went to take a look at another clock, that was unfinished; I stayed away but a short time.

Cross-Q. 47. When you returned to them were they still talking about telephones, or about something else?

Ans. It was getting time for us to start; and they were talking about publishing a notice of the magnetic clock.

Cross-Q. 48. Had the subject of publishing an article been mentioned before that particular period when you returned to them?

Ans. Mr. Lloyd and I had talked it over together previous to going there.

Cross-Q. 49. I mean had it been mentioned to Mr. Drawbaugh before you went out of the room, leaving Mr. Lloyd and him talking about telephones, as you have stated?

Ans. My impression is that it had not been mentioned.

Cross-Q. 50. How long was it after you returned to him and Mr. Lloyd before you and Mr. Lloyd left the shop to return home?

Ans. About ten minutes.

Cross-Q. 51. In that conversation about telephones did you get the idea from Mr. Drawbaugh that up to that time he had received the sound in an open room, and not in any kind of a box which could be applied to the ear, or to which the ear could be applied?

Ans. Yes, sir.

Cross-Q. 52. In conversing on the applications of electricity or mag-

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netism did Mr. Drawbaugh mention that he had invented a magneto-telegraph, an automatic fire-alarm, or a call-bell for hotels?

Ans. I recollect that he mentioned that he could cause bells to sound at a distance by electricity. I don't recollect about the other things mentioned.

Examination taken, reduced to writing, and by the witness affirmed and subscribed to before me, this 27th day of April, 1883.

FRED. M. OTT,
Examiner.

F. U. WORLEY.

Adjourned until 8, P. M., at which time examination resumed.

LEMUEL R. SPONG, *being produced, sworn, and examined, saith:*

Examined by Mr. Storrow:

My age is twenty-eight; residence, West Fairview, Cumberland county, Pa.; I have lived in the town twenty-two years; I am employed as shipping clerk by the Harrisburg Nail Works of Colonel McCormick, and as freight agent by the Northern Central Railroad Company.

Q. 1. Do you know William H. Decker, who formerly lived at Fairview and worked at McCormick's nail works, and did you know his family?

Ans. Yes, sir.

Q. 2. Can you tell me when his family moved away from Fairview, and if his household effects were shipped from there while you were freight agent for the railroad; if so, please produce the railroad books and papers, and give the date of the shipment?

[*Objected to as immaterial and not in rebuttal.*]

Ans. I produce the record of manifests of freight kept by me as freight agent at the time, and I read from it the following: "Forwarded, Fairview, October 20, 1879; Manifest No. 300; Station to, Harrisburg; No. of Car, P. R. R. 10,742; Consignor, owner; Consignee, Mrs. W. H. Decker; Destination, Wilmington, Delaware; Description of articles: three rolls carpet, one chest, one d. tray, 3 boxes, 2 buckets and contents, 1 trunk, 1 table, 1 stand, 1 sewing-machine, boxed; weight, 460; rate, six cents; amount of freight, 88 cents; to be collected, 88 cents."

I have the release for these goods, signed by J. M. Siever, a brother of Mrs. Decker. When damages are released, the railroad company carries the freight cheaper. This release bears the same date, October 20, 1879. All these entries are in my handwriting, except the signature of J. M. Siever, and that is witnessed by me.

Q. 3. Had Mr. Decker's wife and children lived continuously at Fairview for a number of years before this time when they moved away?

[*Same objection.*]

Ans. Yes, sir.

Cross-examination waived by Mr. Hill.

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me this 27th day of April, 1883.

FRED. M. OTT,
Examiner.

LEMUEL R. SPONG.

JOSEPH P. WILBAR, *being produced, sworn, and examined, saith:*

Examined by Mr. Storrow:

My age is thirty-nine; residence, West Fairview, Cumberland county, Penna.; occupation, paymaster at Harrisburg Nail Works, at Fairview.

Q. 1. Do you know William H. Decker, who formerly worked in your works, and whose deposition is found on page 1149 of defendants' record?

Ans. I know William H. Decker, who formerly worked at the Harrisburg Nail Works; I don't know anything about his deposition.

Q. 2. In one of his answers he says that he worked up to December, 1877, and in another answer he says that he quit working for Col. McCormick in September, 1877; if you have here your books, will you please turn to them and state when he did quit working for Col. McCormick?

Ans. I have the labor ledger and also the receipt book. He quit working on the 30th of March, 1878; this is my labor ledger in which I have noted the cash I paid him, $115 18. It corresponds with the receipt in the receipt book of March 30, 1878. The receipt is written by myself; he made his mark, and I wrote his name.

[*Respondents' counsel asks the examiner to examine the accounts referred*

to by the witness, and to certify that the accounts are the accounts of "William Decker" and not of "William H. Decker," and the receipt is the receipt of "William Decker." The examiner so certifies.]

Witness continues:

I know his name to be William H. Decker; I have a good many accounts written in that way in my books, with only the first name. He is the only Decker that worked in the sixteen years that I was there at the Harrisburg nail works, at that work.

Q. 3. What was his work?

Ans. Nail-plate roller.

Q. 4. Your ledger appears to show work done by him in May, 1876, and every month up through 1878, inclusive; does it not?

Ans. Yes, sir; his account in this ledger begins in May, 1876; he worked for us several years before that, as my previous books will show.

Q. 5. Did he go west after he was paid off, March 30; and how long was it between the time when he was paid off and the time when he went west, if you know?

Ans. I know he went west, but the time I can't say; I have no recollection.

Q. 6. Did he come back to Fairview again after he went west, and do you know when?

Ans. He came back, but I don't know when.

Cross-examined by Mr. Hill:

Cross-Q. 7. What was his position in the works?

Ans. Nail-plate roller at the time referred to in these books.

Cross-Q. 8. Did he work pretty steadily during that time?

Ans. He did.

Cross-Q. 9. About how much did his wages average per month in that time?

Ans. His wages would vary according to the weight he made. I would just state here that at times he had a helper with him. He would pay his helper out of his own wages, but I don't know how much he paid him. That was a matter outside of the office. His wages go from $70 to $200 for a month of four weeks.

Cross-Q. 10. Did he live at West Fairview for seven or eight years before he moved away?

Ans. He did; he was married in this time.

Cross-Q. 11. Did you know him pretty well during the time that he lived there?

Ans. Yes, sir; very well.

Cross-Q. 12. Do you regard him as a reliable, truthful man?

Ans. I never had a personal reason to think him otherwise, only that he was inclined to talk very freely on matters that we thought were very highly colored.

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me, this 27th day of April, 1883.

FRED. M. OTT,
Examiner.

J. P. WILBAR.

Adjourned until April 28, 1883, at 10, A. M.

APRIL 28, 1883, 10 A. M.

Examination resumed.

CHARLES W. PIKE, *being produced, sworn, and examined, saith:*

Examined by Mr. Storrow:

My age is forty-two; residence, Harrisburg, Penna.; occupation, shearsman at Harrisburg Nail Works, at West Fairview.

Q. 1. How long have you worked at those nail works?

Ans. I first went there to work in August, 1866, if I remember right.

Q. 2. Did you live in West Fairview in 1878?

Ans. I did.

Q. 3. Did you know William H. Decker, who formerly worked for a number of years in Col. McCormick's works at West Fairview and lived in that town?

Ans. I did.

Q. 4. He has testified that he went west in the spring of 1878; do you remember that fact?

Ans. I remember of his going away from there, and he said that he was going west.

Q. 5. Have you any book entry which enables you to fix any time when he was present in Fairview after the 1st of July of that year; and if so, will you please produce it?

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Ans. I have the records of the meetings of the Sovereigns of Industry, containing minutes of the meeting of August 24, 1878, as follows:

"Moved that a man be sent to Baltimore to see if better arrangements could be made for getting goods there than where we are now getting them. Agreed to.

Messrs. George Schutt and William Decker were proposed as suitable persons to go to Baltimore, and balloted for. Mr. Schutt was elected."

This is in my handwriting and signed by me as secretary.

Q. 6. How long before that, according to your recollection, had Decker returned from the west?

Ans. I could not say positively, but I think a few days before.

Q. 7. Do you remember going to Mr. Drawbaugh's shop to see a lathe; and, if so, did you see it, and what kind of a lathe was it?

Ans. I went to Drawbaugh's shop to see a lathe; it was a small engine-lathe; it was a Shephard lathe.

Q. 8. Who went with you, and what led to your going over there to see it?

Ans. Mr. Jacob May went with me; he had told me that he had seen one there some time before.

Q. 9. Was there any particular reason why you wanted to see a Shephard lathe?

Ans. I had a circular describing the Shephard lathe, and I took it to be a remarkably cheap lathe, and so I wanted to see whether I could get one myself; I had some notion of getting one, and would have liked well enough to get one of those lathes.

Q. 10. What is your recollection as to the time when you made this visit?

Ans. As well as I remember, it was in the fall of 1878.

Cross-examined by Mr. Hill:

Cross-Q. 11. What time in the fall of 1878 was it?

Ans. I couldn't say positive, but think it was in October or November.

Cross-Q. 12. How long were you at Drawbaugh's shop on that occasion?

Ans. Probably two hours.

Cross-Q. 13. Did you see any talking-machines there?

Ans. No, sir; none that I remember of.

Cross-Q. 14. Was anything said about them there?

Ans. I have no recollection of anything being said about them.

Examination taken, reduced to writing, and by the witness sworn and subscribed to before me, this 28th day of April, A. D. 1883.

FRED. M. OTT,
Examiner.

C. W. PIKE.

JACOB MAY, *being produced, affirmed, and examined, saith:*

Examined by Mr. Storrow:

My age is forty-eight. Residence, West Fairview, Cumberland county, Pennsylvania. Occupation, carpenter.

Q. 1. Do you know Daniel Drawbaugh, and how long have you known him?

Ans. Possibly twenty years.

Q. 2. Do you know William H. Decker, who formerly lived at Fairview and worked in Colonel McCormick's works?

Ans. I do.

Q. 3. Please state the dates of birth of all the children that have been born to you since 1870, and if you have here the family record in the Bible, please refer to that for the dates also?

Ans. I have here the family Bible. The children are as follows:

"Florence J. May, March 17, 1872."

"Catharine May, August 12, 1876."

Q. 4. Was there any occurrence in your family that could have been called an "increase of family" or an expected increase of family between the birth of Florence and the birth of Catharine?

Ans. No, sir.

Q. 5. Do you remember the first time you went to Mr. Drawbaugh's present shop, at Eberly's Mills; and if so, what took you to the village, and who went with you?

Ans. I do not remember the time. I went with Mr. Stevenson for the purpose of getting some money from Mr. Leonard.

Q. 6. Did anybody take you to Mr. Leonard's house and introduce you to him on that visit; and if so, who?

Ans. Mr. Drawbaugh.

Q. 7. After he had introduced you to Mr. Leonard, did he stay with you all the time that you talked with Leonard, or did he go off?

Ans. After the introduction he excused himself, and said he was going to the house.

Q. 8. What house did he go to?

Ans. A rough cast house below Mr. Leonard's.

Q. 9. By below, do you mean down hill?

Ans. Yes, down hill.

Q. 10. Was it the house across the road from the mill?

Ans. Yes.

Q. 11. Who went with you to Drawbaugh's shop the next time you went there?

Ans. I believe it was Mr. Decker, to the best of my recollection.

Q. 12. Was that visit with Mr. Decker the same year as your visit with Mr. Stevenson, or a subsequent year?

Ans. A subsequent one.

Q. 13. Do you remember any particular piece of machinery that specially attracted your attention on the occasion of that visit with Mr. Decker?

Ans. Yes, sir.

Q. 14. What was it?

Ans. A Shephard lathe.

Q. 15. Do you remember mentioning that lathe to Mr. Pike and going over with him that he might see it? State what your recollection is on that subject.

Ans. I do not remember the conversation with Mr. Pike; my impression is in consequence of me seeing that lathe was the cause of our visit there.

Q. 16. Did you and Mr. Pike go there after the visit you made with Mr. Decker?

Ans. Yes, sir.

Q. 17. When you and Mr. Decker went over to Drawbaugh's shop do you remember stopping at the spring near the grist-mill, at Eberly's Mills, to get some water?

Ans. Yes, sir.

Q. 18. Did you meet anybody in the spring at that time and have any conversation; and, if so, who was it and what was the subject of the conversation?

[*Conversation objected to as hearsay.*]

Ans. I met the miller there; Mr. Decker spoke to the miller in regard to greenbackism.

Q. 19. Was Mr. Decker a pretty strong talker in favor of greenbackism at that time?

Ans. Yes, sir.

Q. 20. Was that during the campaign for the election of Governor?

[*Objected to as leading.*]

Ans. To the best of my recollection, yes.

Q. 21. What is your recollection as to the year when this visit with Decker was made?

Ans. My impression is, that it was in 1878.

Q. 22. Have you ever made any other visit to Drawbaugh's shop with Decker?

[*Objected to as leading.*]

Ans. I do not recollect of having made any others.

Q. 23. Mr. Decker testifies in substance, that he saw a certain wonderful clock at Harrisburg on exhibition, and mentioned it to you, and you told him that Drawbaugh had a remarkable clock, and that in consequence of that you and he went to Drawbaugh's to see his clock; state what your recollection is about that matter.

Ans. I do not remember the conversation with Mr. Decker in regard to the clock. My impression is, that there had been something of the kind talked of, and in consequence of which, our visit.

Q. 24. Has Mr. Drawbaugh, within two or three years, been to see you, and shown you some instruments which he called talking-machines, and asked you if you recollected anything about them?

Ans. He has.

Q. 25. I now show you all the instruments produced by Mr. Drawbaugh as talking-machines made by him before this suit began, and ask you if you can identify any of them as instruments which you saw at his shop at Eberly's Mills on either of your visits?

Ans. I can only identify this one, [indicating "A."]

Q. 26. If you remember anything particular about that instrument "A," state what it is.

Ans. My impression is, upon the visit of Mr. Pike and I, he had been showing us this instrument, or something like it.

Q. 27. If you remember any particular thing that was done with it, or way of showing it, state what it was.

Ans. It was in producing a peculiar sound by humming, or something of that kind, in the mouth-piece.

Q. 28. Have you any recollection of seeing the glass tumbler instrument "F" at Drawbaugh's shop; and if so, what recollection have you about it?

Ans. The tumbler seems familiar, but I have no particular recollections. My impression is that I saw it on the vise bench.

Q. 29. Have you any recollection about any of the other instruments?

Ans. I cannot identify any particular instrument, only the two mentioned.

Cross-examined by Mr. Hill.

Cross-Q. 30. How long have you known Daniel Drawbaugh?

Ans. Near twenty years.

Cross-Q. 31. How long have you known William H. Decker?

Ans. Probably twelve years.

Cross-Q. 32. When Decker lived in West Fairview how far did he live from where you lived?

Ans. To the best of my judgment about one fourth mile.

Cross-Q. 33. Were Decker's family and your family well acquainted with each other?

Ans. So far as the families were concerned, they only had a casual acquaintance.

Cross-Q. 34. How many visits did you ever make to Drawbaugh's shop in all?

Ans. Four, to the best of my recollection.

Cross-Q. 35. Your memory is not very good, is it?

Ans. No, sir; not as to dates.

Cross-Q. 36. Don't you remember being at Drawbaugh's shop before your visit with Mr. Stevenson?

Ans I do not remember.

Cross-Q. 37. Are you willing to swear that you were never there before your visit with Mr. Stevenson?

Ans. No, sir; I would not.

Cross-Q. 38. At any time when you were there, did you ever go down into the cellar or basement of the shop?

Ans. I did.

Cross-Q. 39. Did you ever go down there into the cellar more than once?

Ans. I do not remember of ever being down more than once.

Cross-Q. 40. Do you remember seeing a cider-machine down in the cellar, when you were down there?

Ans. I do not.

Cross-Q. 41. What do you remember seeing down in the cellar?

Ans. A self-feeding nail machine.

Cross-Q. 42. Did you ever know anything about an axle company carrying on business at Drawbaugh's shop—a company in which Captain Moore, Mr. Kline and others were interested?

Ans. Yes, sir.

Cross-Q. 43. Do you remember being at that shop while that company were carrying on business there?

Ans. I do not remember of being there during that time.

Cross-Q. 44. You were there before the axle company commenced their business there, were you not?

Ans. It may be possible, but I have no recollection of it.

Cross-Q. 45. Do you remember anything about the Haucks' of Mechanicsburg carrying on the faucet business at Drawbaugh's shop?

Ans. I have no distinct recollection; my impression is, that Mr. Stevenson had told me something in connection with it.

Cross-Q. 46. What Mr. Stevenson?

Ans. David Stevenson, who lives at Harrisburg.

Cross-Q. 47. What is his business?

Ans. He is a machinist.

Cross-Q. 48. Is he the man who went with you to Mr. Leonard to get the money?

Ans. Yes, sir.

Cross-Q. 49. What Mr. Leonard was that?

Ans. I cannot give his given name.

Cross-Q. 50. Would you know it if you heard it?

Ans. I do not know that I would.

Cross-Q. 51. Was it George Leonard?

Ans. I do not remember.

Cross-Q. 52. Where did he live?

Ans. In Milltown, opposite Eberly's mill.

Cross-Q. 53. How old a man was he?

Ans. He was probably sixty or sixty-five, or along there, I judge.

Cross-Q. 54. How near did he live to Eberly's mill?

Ans. I should think about one hundred yards.

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Cross-Q. 55. Who wanted to get the money from him—you or Mr. Stevenson?

Ans. Myself.

Cross-Q. 56. How much did he owe you, and for what?

Ans. He did not owe me anything.

Cross-Q. 57. Did yon go to him to borrow money?

Ans. I did.

Cross-Q. 58. Did he lend you any?

Ans. No, sir.

Cross-Q. 59. What did you want the money for at that time?

Ans. To go into business with Mr. Stevenson.

Cross-Q. 60. Did you go into business with Mr. Stevenson about that time?

Ans. No, sir.

Cross-Q. 61. Did you ever go into business with him?

Ans. No, sir.

Cross-Q. 62. What business were you talking of going into with him?

Ans. Steam-fitting and engineer supplies.

Cross-Q. 63. At Harrisburg?

Ans. Yes, sir.

Cross-Q. 64. Was Mr. Stevenson living at Harrisburg then?

Ans. He was.

Cross-Q. 65. How long were you and Mr. Stevenson at Mr. Drawbaugh's shop that day?

Ans. As near as I remember, about one hour.

Cross-Q. 66. Did you go there for anything except to get Mr. Drawbaugh to introduce you to Mr. Leonard?

Ans. Mr. Stevenson, I believe, had some business with Mr. Drawbaugh.

Cross-Q. 67. What business?

Ans. I do not remember; my impression is it was in connection with a pump.

Cross-Q. 68. In what part of the shop were you on that day?

Ans. I cannot say that I was in any particular part of the shop that day; I have no clear recollection of it.

Cross-Q. 69. How happened you to go to Mr. Drawbaugh's shop the next time you went there after that?

Ans. I do not clearly remember the circumstances.

Cross-Q. 70. Do you remember who was with you, if anybody?

Ans. My impression is that my next visit was with Mr. Decker.

Cross-Q. 71. You are not certain about that, are you?

Ans. I cannot say positively that such is the case. This is only my impression.

Cross-Q. 72. Referring to the time when you first went there with Mr. Decker, what did you go there for then?

Ans. Only to see the clock.

Cross-Q. 73. How long were you there then?

Ans. I do not remember. I may possibly have been three hours.

Cross-Q. 74. Wasn't that visit during the Hayes and Tilden campaign of 1876?

Ans. It may be possible, but I have no recollection of that being the time.

Cross-Q. 75. What time of day were you there with Mr. Decker?

Ans. I think it was in the forenoon.

Cross-Q. 76. What time did you start from home?

Ans. I think it was in the morning about seven o'clock.

Cross-Q. 77. How far is West Fairview from Drawbaugh's shop?

Ans. I have generally heard it called about four miles.

Cross-Q. 78. Did you walk over or ride?

Ans. We walked.

Cross-Q. 79. Where did you get your dinner that day?

Ans. I think I got it at home.

Cross-Q. 80. Do you know anything about Drawbaugh's living at Mechanicsburg at one time?

Ans. I know of him living there.

Cross-Q. 81. Wasn't that visit which you made to his shop with Decker while Drawbaugh was living at Mechanicsburg?

Ans. I do not remember.

Cross-Q. 82. Were you ever at Drawbaugh's shop with Decker more than once?

Ans. I do not remember of being there more than once with Mr. Decker.

Cross-Q. 83. When you were there with Mr. Decker, did you talk about greenbacks with Mr. Drawbaugh?

Ans. Yes; I remember of something of that kind being talked of.

Cross-Q. 84. Was the subject of organizing a greenback club at West Fairview talked of during that visit?

Ans. It may have been; I do not remember.

Cross-Q. 85. When were you at Drawbaugh's shop next after that, and with whom?

Ans. My next visit, I think, was in company with Mr. Charles W. Pike.

Cross-Q. 86. When and with whom was your next visit, after your visit with Mr. Pike?

Ans. I do not remember when my next visit took place. There was no one with me then.

Cross-Q. 87. How happened you to go there then?

Ans. Simply to see Mr. Drawbaugh—to see what he was doing.

Cross-Q. 88. What was he doing?

Ans. I think he was working on a pattern for a motor.

Cross-Q. 89. A water motor?

Ans. Yes.

Cross-Q. 90. Do you remember of Drawbaugh's ever showing you any telegraph instruments when you were at his shop at any time?

Ans. I don't know whether you would call them telegraph instruments, but he did show me how a current of electricity could be produced from a permanent magnet, which could have been used for that purpose.

Cross-Q. 91. When was that?

Ans. I do not remember whether it was the time I was there with Mr. Stevenson, with Mr. Decker, or with Mr. Pike.

Cross-Q. 92. Mention all the machinery of his invention that he ever showed you at any time when you were there.

Ans. I don't know whether I can.

Cross-Q. 93. Then mention all you remember.

Ans. I have seen a faucet, several pumps, a stave-cutter, and jointer; I cannot now think of others.

Cross-Q. 94. How many times did you ever see a stave-cutter and jointer there?

Ans. I do not remember seeing the stave cutter and jointer there at his shop. The question I thought referred to all of his inventions that I had seen, regardless of the time.

Cross-Q. 95. No; I meant what you had seen at his shop. Please mention all the inventions of his that you have seen at his shop at any time, so far as you can remember them?

Ans. I just now recall the nail-machine, the clock, and what I would call an insulating-machine, and this (indicating "A.")

Cross-Q. 96. On what visit was it that you went down into the cellar of the shop, and saw the nail-machine?

Ans. I do not remember.

Cross-Q. 97. Has this machine "H," or this machine "C reproduced," any resemblance to anything you ever saw in Drawbaugh's shop so far as you can remember?

Ans. I may have seen them, but I do not remember at the present time.

Cross-Q. 98. Answer the same question as to "B."

Ans. I cannot positively say that I have seen it.

Cross-Q. 99. Answer the same question as to "D" and "E."

Ans. The answer applies to those.

Cross-Q. 100. Did anybody talk through Drawbaugh's telephones while you were at his shop?

Ans. Not to my recollection.

Examination taken, reduced to writing, and by the witness affirmed and subscribed before me, this 28th day of April, A. D. 1883.

FRED. M. OTT,
Examiner.

J. G. MAY.

(*Mr. Storrow produces for inspection certain newspapers referred to in the deposition of Joseph Weaver, pp.* 1222 *and* 1223, *to wit: The file of the Saturday Evening Journal, including the issues of October* 20, 1877, *March* 30, 1878, *April* 6, 1878; *also the Saturday Evening Journal of May* 18, 1878, *the Independent Journal, April* 17, 1878, *May* –, 1878, *November* 20, 1878.

He requests the examiner to certify that under the Constitution of Pennsylvania a Governor was elected in November, 1875, *for three years, and in November,* 1878, *for four years. The Examiner so certifies.*)

Adjourned to meet at 40 State street, Boston, on notice.

THE DEPOSITION OF CHRISTIAN H. BRADY, A WITNESS PRODUCED, SWORN, AND EXAMINED THE 11TH DAY OF APRIL, A. D. 1883, AT CHICAGO, IN THE STATE OF ILLINOIS, BY COMMISSION.

Interrogatory 1. Please state your name, age, residence, occupation, and present place of business.

Answer to Interrogatory 1. My name is Christian H. Brady; my age is forty-eight years; my residence is 293 West Randolph street; my

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occupation is foreman for Crane Brothers Manufacturing Company; and my present place of business is at their office, in the city of Chicago.

Interrogatory 2. Were you formerly engaged in the foundry and iron business at Mount Joy, or at Lancaster, Pennsylvania, and while there did you become acquainted with Theophilus Weaver, of Harrisburg, Pennsylvania?

Answer to Interrogatory 2. I was in the foundry business at Mount Joy, and while there I became acquainted with Theophilus Weaver, of Harrisburg, Pennsylvania.

Interrogatory 3. Did you, while living at Mount Joy, or at Lancaster, and about or before the year 1869, make an invention in corn-shellers, concerning which you employed said Weaver to make some drawings?

Answer to Interrogatory 3. About the year 1869, while I was living at Mount Joy, in the State of Pennsylvania, I made an invention for improvements in corn-shellers, and I employed said Weaver to make some drawings showing the nature of my invention.

Interrogatory 4. Said Weaver afterwards patented certain improvements in corn-shellers, and manufactured, by himself, or others whom he licensed, corn-shellers according to his invention. Did you ever believe, or do you now believe, that said Weaver stole his corn-sheller invention from you?

Answer to Interrogatory 4. I recollect that said Weaver purported to make some improvement in corn-shellers about the time, or a little while after, he made this drawing for me, and I think I saw, for a little while, his model, but I have no opinion or belief on the question of whether he stole it from me or not. It was about twelve or fourteen years ago, and I don't recollect what his improvements were, at this time. As far as I know, or now recollect, he never stole anything from me.

Interrogatory 5. In the matter of corn-shellers, or in any other matter, did said Weaver ever act dishonestly towards you; are you or are you not now on friendly terms with him?

Answer to Interrogatory 5. He never acted dishonestly towards me in the matter of corn-shellers, or any other matter, to my knowledge. I have met Weaver only two or three times since 1869, and I have always been on friendly terms with him, and am now, so far as I know.

Subscribed and sworn to, the 11th day of April, 1883.

CHRISTIAN H. BRADY.

EVIDENCE TAKEN AT WASHINGTON, D. C.,

BEFORE

CHARLES H. SWAN, EXAMINER.

WASHINGTON, D. C., *February* 20, 1883.

Present, J. J. Storrow, Esq., of counsel for complainants, L. Hill, Esq., of counsel for defendants, before me, Charles H. Swan, examiner.

DEPOSITION OF ALEXANDER GRAHAM BELL, CONTINUED FROM P. 200.

Direct examination by J. J. Storrow, Esq., of counsel for complainants:

Q. 273. Your deposition in the case of Bell Telephone Company *vs.* Peter A. Dowd has been put into this case by stipulation, and is printed on pp. 105–200 of complainants' evidence. You are now recalled for further cross-examination at the request of the defendants and in accordance with such stipulation. I will first ask you whether the statements in that deposition are true as therein stated?

Ans. They are.

Cross-examination by L. Hill, Esq., of counsel for defendants:

Cross-Q. 274. There have been a number of suits upon your two patents which are involved in this controversy. Have you made other depositions in those suits, or have you used the same deposition that you made in the Dowd case?

Ans. The same deposition has been used in all.

Cross-Q. 275. I understand that the inventions which are involved in said two patents, have also been involved in some interferences in the Patent Office; am I correct?

Ans. I believe so.

Cross-Q. 276. Are those interferences yet determined, or are they still pending?

Ans. They are still pending.

Cross-Q. 277. In your deposition in the Dowd suit, I observe that reference is made also to multiple telegraph interferences; state how many multiple telegraph interferences you have been a party to, and whether they are still pending, or have been determined.

Ans. One, and it has not been determined.

Cross-Q. 278. Inasmuch as the preliminary statement in that interference has been referred to in your deposition, but has not been put in evidence, will you please put a copy of it in evidence?

Ans. I will produce it. Part of it is already in evidence, (pages 64—66 of complainants' exhibits,) and referred to in my answer to interrogatory 222, page 187, and interrogatory 264, page 199.

Cross-Q. 279. Referring to the two patents involved in this suit, how many interferences have been instituted in the Patent Office upon the inventions therein contained, and with what parties, and have you made and filed preliminary statements in each of them under the rules of the Patent Office?

Ans. One set of interferences with a number of different issues. The various issues include Gray, Edison, Dolbear, Voelker, and McDonough, some being on one issue and some being on several issues. I have filed statements applicable to each in compliance with the rules.

Cross-Q. 280. So far as said last-mentioned preliminary statements involve inventions in controversy in this suit, or referred to in your deposition herein, will you please produce copies of them that they may be put in evidence in connection with your deposition?

Ans. I will.

Cross-Q. 281. When did you first succeed in getting your electric-speaking telephone to transmit vocal speech so that it was heard and understood from the receiver?

Ans. Somewhere about June or July, 1875. The articulation of the instrument was not entirely intelligible at this time, but I feel perfectly sure that many words were understood, although I cannot recall the details of any particular experiment made at this time when the words were fully understood.

Cross-Q. 282. Can you state the circumstances under which any experiment was made in June or July, 1875, at which any word was heard and understood through the instruments?

Ans. My recollection of these experiments is very vague, but I remember distinctly that on one occasion I was speaking to a membrane

telephone (of the form marked in this case as "telephone of 1875") in the top part of Mr. Williams' factory, 109 Court street, Boston, while Mr. Thomas Watson was listening to an instrument in the workshop below. I was interrupted by the sudden appearance of Mr. Watson, who had rushed up stairs in a state of great excitement, and who declared that he had heard vocal sounds proceed from the instrument to which he had been listening, and that he could almost understand what was said. We then changed places, but I was unable to hear anything on that occasion. This inability I attributed at the time to the noise of the machinery in the workshop, and to the fact that Mr. Watson was unable to throw out his voice with sufficient force to set the membrane of his telephone into good vibration. I have a general recollection that numerous similar experiments were made during June and July, and that I, myself, obtained audible results. It is my impression that a few common words or sentences were occasionally understood, but I cannot give the details of any particular experiment in which this was the case. I only remember that the results were such as to lead me to the firm conviction that the speaking-telephone was a *fait accompli*. In consequence of this I took out a patent for the speaking-telephone without waiting to obtain better results.

Cross-Q. 283. Am I to understand you that when your patent of March 7, 1876, issued, you had attained no better results than the results which you attained in June and July, 1875? And if that is not your meaning, please explain more fully what you mean by the last part of your last answer.

Ans. That is my meaning.

Cross-Q. 284. Did Mr. Watson assist you in all your telephone experiments in June and July, 1875?

Ans. He did.

Cross-Q. 285. In the experiment to which you referred in answer to cross-question 282, when Mr. Watson interrupted you by rushing up and announcing that he had heard vocal sounds, he also informed you that he could not make out through the instrument what you said, did he not?

Ans. He did; he said "he could almost understand what I said."

Cross-Q. 286. He did not state any word that he thought he had heard, did he?

Ans. I don't remember; I cannot recall the experiment in any detail; I simply have the general remembrance of the excitement which

Ans. They are still pending.

Cross-Q. 277. In your deposition in the Dowd suit, I observe that reference is made also to multiple telegraph interferences; state how many multiple telegraph interferences you have been a party to, and whether they are still pending, or have been determined.

Ans. One, and it has not been determined.

Cross-Q. 278. Inasmuch as the preliminary statement in that interference has been referred to in your deposition, but has not been put in evidence, will you please put a copy of it in evidence?

Ans. I will produce it. Part of it is already in evidence, (pages 64—66 of complainants' exhibits,) and referred to in my answer to interrogatory 222, page 187, and interrogatory 264, page 199.

Cross-Q. 279. Referring to the two patents involved in this suit, how many interferences have been instituted in the Patent Office upon the inventions therein contained, and with what parties, and have you made and filed preliminary statements in each of them under the rules of the Patent Office?

Ans. One set of interferences with a number of different issues. The various issues include Gray, Edison, Dolbear, Voelker, and McDonough, some being on one issue and some being on several issues. I have filed statements applicable to each in compliance with the rules.

Cross-Q. 280. So far as said last-mentioned preliminary statements involve inventions in controversy in this suit, or referred to in your deposition herein, will you please produce copies of them that they may be put in evidence in connection with your deposition?

Ans. I will.

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Ans. Somewhere about June or July, 1875. The articulation of the instrument was not entirely intelligible at this time, but I feel perfectly sure that many words were understood, although I cannot recall the details of any particular experiment made at this time when the words were fully understood.

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Ans. My recollection of these experiments is very vague, but I remember distinctly that on one occasion I was speaking to a membrane

telephone (of the form marked in this case as "telephone of 1875") in the top part of Mr. Williams' factory, 109 Court street, Boston, while Mr. Thomas Watson was listening to an instrument in the workshop below. I was interrupted by the sudden appearance of Mr. Watson, who had rushed up stairs in a state of great excitement, and who declared that he had heard vocal sounds proceed from the instrument to which he had been listening, and that he could almost understand what was said. We then changed places, but I was unable to hear anything on that occasion. This inability I attributed at the time to the noise of the machinery in the workshop, and to the fact that Mr. Watson was unable to throw out his voice with sufficient force to set the membrane of his telephone into good vibration. I have a general recollection that numerous similar experiments were made during June and July, and that I, myself, obtained audible results. It is my impression that a few common words or sentences were occasionally understood, but I cannot give the details of any particular experiment in which this was the case. I only remember that the results were such as to lead me to the firm conviction that the speaking-telephone was a *fait accompli*. In consequence of this I took out a patent for the speaking-telephone without waiting to obtain better results.

Cross-Q. 283. Am I to understand you that when your patent of March 7, 1876, issued, you had attained no better results than the results which you attained in June and July, 1875? And if that is not your meaning, please explain more fully what you mean by the last part of your last answer.

Ans. That is my meaning.

Cross-Q. 284. Did Mr. Watson assist you in all your telephone experiments in June and July, 1875?

Ans. He did.

Cross-Q. 285. In the experiment to which you referred in answer to cross-question 282, when Mr. Watson interrupted you by rushing up and announcing that he had heard vocal sounds, he also informed you that he could not make out through the instrument what you said, did he not?

Ans. He did; he said "he could almost understand what I said."

Cross-Q. 286. He did not state any word that he thought he had heard, did he?

Ans. I don't remember; I cannot recall the experiment in any detail; I simply have the general remembrance of the excitement which

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he manifested, and of my disappointment at not being able to hear what he had.

Cross-Q. 287. From his excitement I should judge that that experiment had produced better results than any prior experiment; is that your understanding?

Ans. It may be so.

Cross-Q. 288. When you exchanged places with him during that experiment you were not able to understand any words through the telephone, were you?

Ans. No.

Cross-Q. 289. And if I understand you correctly, you were also disappointed in not being able to personally verify Mr. Watson's statement as to the result obtained. Am I correct?

Ans. Yes; in regard to that experiment.

Cross-Q. 290. Do you remember any other experiment which you made between that time and the issue of your patent of March 7, 1876, in operating, or attempting to operate, speaking-telephones?

Ans. I remember that I made a number of experiments during June and July, the details of which I have forgotten.

Cross-Q. 291. Then your memory of that particular experiment, in which Mr. Watson rushed up stairs and made the announcement above referred to, is more distinct than your memory of any other experiment made after that, and prior to March 7, 1876, is it?

Ans. Much more distinct than any single experiment made between those dates. While I cannot recall, with any distinctness, the details of any *particular experiment*, I do have a very clear recollection of the general results of them all. I felt convinced that I had solved the problem of the reproduction of speech by electrical means.

Cross-Q. 292. Did you become convinced of that as early as July, 1875, or not until afterwards?

Ans. Earlier.

Cross-Q. 293. When, for the first time?

Ans. In the summer of 1874 I became convinced that I had devised a method and apparatus by which the sonorous vibrations of the air could be caused to produce similar sonorous vibrations in the air of a distant place. There was no doubt in my mind, therefore, that if the reproduced vibrations were sufficiently violent, they would affect the ear as a sound of similar character or quality to that produced by the original vibrations. That is, I became convinced, in the summer of

1874, that I had arrived at the true conception of a speaking telephone. The chief doubt in my mind at that time was as to the practical value of the reproduced speech. I saw that while the reproduction of the original vibrations would, theoretically, be perfect, they would be copied in miniature—they would be, as it were, microscopic photographs of the originals.

While we may not be able to see all the details of a microscopic photograph, we may be firmly convinced that they are all there, and that we have only to enlarge them in order to render them appreciable by the eye.

In a similar manner I was firmly convinced, in the summer of 1874, that articulate speech would be reproduced by the apparatus I had devised, but I was doubtful whether the unassisted ear could perceive the vibrations as sound, and whether, if so, the minute details of the vibrations, upon which depend the character or quality of the sounds produced, would be perceived by the sense of hearing. At that time I proposed to take advantage of magneto-electric currents produced by the vibration of an armature actuated by the voice of a speaker, so that the electrical current employed would be produced by the action of the voice itself, and not independently of it; hence the reproduced vibrations would necessarily be very much feebler than the originals, and it was questionable in my mind how far they would be of practical value. During the winter of 1874 and the spring of 1875, this feeling led me to seek some method by which the voice, instead of producing the electrical current used, should merely modify a current produced by other means. In May, 1875, I devised a method of varying the resistance of a galvanic circuit by the action of the voice, in the hope that this would obviate the supposed insufficiency of the magneto-electric currents to produce practically operative effects. I was still carrying on experiments and researches regarding this method when the accidental discovery made on the 2d of June, 1875, already testified to, proved that the supposed insufficiency of the magneto-electric current to produce audible effects, was a mistake. I immediately ordered the construction of the speaking telephones devised by me in 1874, and the fact that any sound was audible under the disadvantageous circumstances of the experiments, was conclusive to my mind that the problem had been solved, and that the instruments devised in 1874 would prove to be practically operative.

To recapitulate: I became convinced for the first time that I had

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solved the problem of the reproduction of speech by electrical means, in the summer of 1874, and I became convinced for the first time that the instruments then devised would prove practically operative speaking telephones, in June, 1875.

Cross-Q. 294. If I understand you, you conceived the principle of the invention in 1874, but your first attempt to embody that principle in a working machine was after June 2, 1875; am I correct?

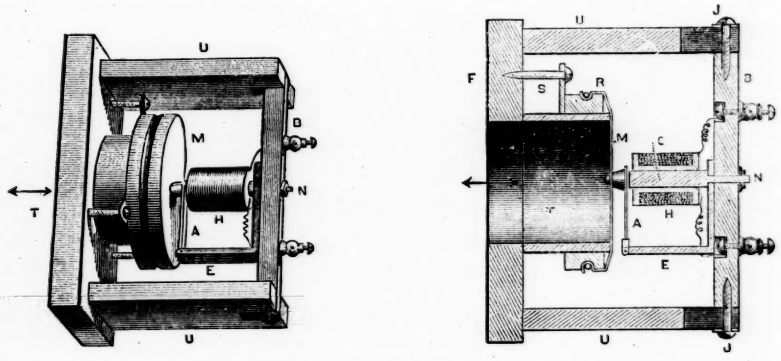
Ans. Not quite; I conceived the apparatus as well as the principle in the summer of 1874, but did not actually construct the apparatus until June, 1875.

Cross-Q. 295. From June 2, 1875, till February 14, 1876, the date when your application for the patent of 1876 was filed, how many different telephone instruments did you actually cause to be constructed and tested?

Ans. I don't know.

Cross-Q. 296. Will you, then, commencing from June 2, 1875, give me a history of the development of your different instruments up to February 14, 1876, together with a description of each instrument, giving them in the order in which they were produced, to the best of your recollection, and making reference to your deposition in the Dowd case if it will be of any aid to you?

Ans. On the second of June, 1875, I find by reference to a letter that I wrote to Mr. Hubbard on that day, which is given on page 136 of complainants' record in this case, I made the discovery that the vibration of a tuned reed in front of an electro-magnet would occasion a very sensible musical sound from another reed placed near the pole of another electro-magnet in the same circuit with the first, even when there was no battery upon the circuit. I presumed that the vibration of the transmitting reed acting upon the residual magnetism in the electro-magnet had occasioned magneto-electric currents, and that these had caused the reed of the receiving instrument to vibrate so as to produce audible effects. Reasoning from this experiment that the speaking telephone devised by me in the summer of 1874 would prove operative, I immediately gave instructions to have two instruments made like that shown in complainants' Exhibit No. 19, Bell Telephone of 1875. I insert here for convenience a view and sectional drawing of one of the reproduced instruments, marked for identification Nos. 49 and 50.



BELL'S FIRST TELEPHONE OF 1875.
Scale of Section, one fourth size.

While these instruments were being made, I carried on experiments with tuned reeds, and with permanent magnets vibrated in front of electro-magnets, to determine, so far as possible, that arrangement which would produce the most violent effect at the receiving end; and I find, by reference to a letter that I wrote to Mr. Hubbard on the 28th of June, 1875, and which is given on page 141 of the evidence for complainants, that I was at that time making a special study of Ladd's and Wilde's magneto-electric machines, hoping, by this means, as I stated, to arrive at an arrangement for increasing the intensity of the induced currents. I do not remember the exact date when the first instruments like those shown above in the drawings were completed, but I remember that I was so anxious to ascertain whether the vibration produced by the voice would produce any audible effect, that I could not wait for the construction of duplicate instruments, like those shown, but tested this point when the first instrument was made, using, as a receiver, a tuned reed instrument, like that produced by Mr. Watson in his 109th answer, page 222, called Bell's harmonic receiver, and, I believe, the same instrument. It is substantially the same as that shown in Fig. 5 of the patent of March 7, 1876. and is referred to, also, in Mr. Watson's deposition, interrogatories 28–33, pages 207 and 208. I hereby insert, for convenience, a drawing of the instrument produced.

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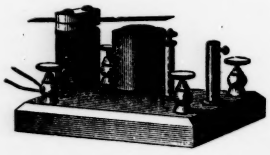
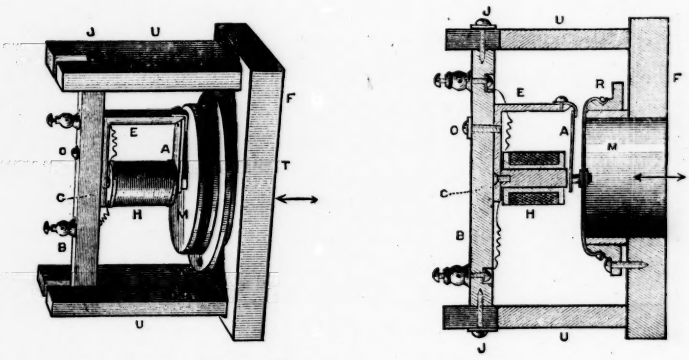


COMPLAINANT'S EXHIBIT No. 48—BELL'S HARMONIC RECEIVER.
(*See Watson, pp. 207 and 222.*)

I had hardly expected that articulate sounds would be produced by a tuned receiver, and I was much encouraged, therefore, to find that the varying pitch of the voice was plainly perceptible even when no battery was upon the line. This experiment is described in a letter to Mr. Hubbard, dated July 1, 1875, given on page 143 of the evidence for the complainants.

It is my impression that the first membrane telephone was made within a day or two of the 2d of June, 1875, but that it could not be operated because the armature was too heavy and the membrane too thin. I remember distinctly that in the first instrument the armature was torn from its attachment to the membrane by the powerful attraction of the electro-magnet when the battery current was passed through it. This led to the improvement of using a lighter armature and a thicker membrane. It is my belief that these improvements were made previously to the experiment of July 1, noted in my letter to Mr. Hubbard of that date; but they may have been later, for that experiment was made without any battery on the circuit, and in my letter I speak of the transmitting instrument as having consisted of "a stretched membrane attached to the armature of an electro-magnet," which would seem to indicate the earliest form of apparatus, with a thick iron armature instead of a flat steel spring.

Another improvement made when a thin membrane was used was to attach one end of the flat steel spring to the uncovered leg of the electro-magnet by means of a leather hinge instead of a pivoted hinge. Shortly after the 1st of July a duplicate membrane telephone was made, and the two were tried on the same circuit. The adjusting thumb-screw carrying the electro-magnet, shown in the drawing on page 4 of the book of complainants' exhibits, should not be there. The adjustment in both cases was provided by moving the cross-bar up and down the slots in the side-bars and clamping it. I insert, for convenience, a view and sectional drawing of a correct reproduction of it. Said reproductions are marked for identification Nos. 51 and 52.



BELL'S SECOND TELEPHONE OF 1875.
Scale of Section, one fourth size.

With the two membrane telephones in the same circuit numerous experiments were made, my recollection of which has already been described in answer to cross-question 282. I satisfied myself by listening at the receiving-telephone that the articulation was there, although as above stated, I cannot recall the details of any particular experiment in which I heard words and sentences. I was satisfied with having attained audible results at all, for I knew from theory that the articulation was there, and I was convinced that the instruments had only to be properly and made, tried under suitable conditions of experiment to be practically operative. The greater portion of my time, therefore, after the 1st of July was taken up in experiment with vibrating reeds and permanent magnets in front of electro-magnets with the coils varied in different ways to arrive empirically at that arrangement that would produce the most violent effects. Few, if any, experiments of any kind were made between the end of July and the date of the patent.

Adjourned to February 21, at 11, A. M.

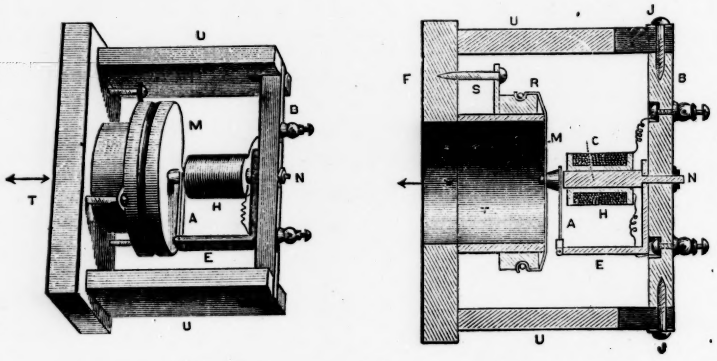
FEBRUARY 21, 1883.

Cross-Q. 297. You state in your last answer that "few, if any, experiments of any kind were made between the end of July and the date of the patent;" I judge from that statement that you cannot remember of any experiments having been made between the end of July and the date of the patent; am I correct?

Ans. Yes.

Cross-Q. 298. In the same answer you referred to duplicate membrane instruments used in July, 1875, and to drawings of reproductions thereof; will you please describe those drawings and the different parts thereof as shown, specifying the particular instrument to which they severally relate, and stating which of said instruments was first made and used?

Ans. The following figures show the construction of the first membrane telephone constructed, with some of the improvements that had been made on the instrument prior, I think, to the construction of the second instrument.



BELL'S FIRST TELEPHONE OF 1875.

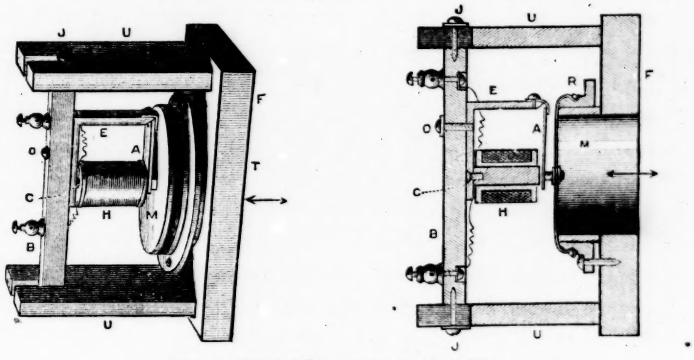
Scale of Section, one fourth size.

An armature A was hinged by a pivot-hinge to the uncovered leg E of an electro magnet C E, the free end of the armature being opposite that pole C of the electro-magnet which carried the coil H. The free end of the armature A was attached to the center of a stretched membrane M, as shown. The membrane M was stretched over a wooden ring R, the distance of which, from the base-board, could be regulated by three adjusting screws S S S, thus causing the membrane to be strained to a greater or less extent over the mouth of the tube T. The electro-magnet C E was attached to a cross-bar B, which could be moved up and down in the slots of the side pieces U and clamped by the screws J, so as to bring the end of the core C nearer to or further from the armature A. In this instrument, as originally constructed, the armature A consisted of a thick piece of soft iron. If my recollection is correct, the end of the armature was at first glued or cemented to a cork which was fastened in a similar way to the center of the membrane M.

The powerful attraction of the electro-magnet C would cause the armature to become detached from the membrane, and it was this fact that led to improvements in the methods of attachment. One of these improvements consisted in attaching the cork to the membrane by a screw which passed up through the membrane, causing the latter to be clamped tightly between the cork and a metal washer. This is shown in the figure I am describing. Another improvement consisted in the substitution of a little metal pillar for the cork. This is shown in the drawing that I shall describe further on. These improvements, however, did not meet the difficulties of the case. When the instrument had been so arranged that the armature could not be detached from the membrane, then the attraction of the electro-magnet caused the rupture of the membrane. This led to the employment of thicker membranes and thinner armatures. In the above drawings the armature A consisted of a piece of steel spring, pivoted at one end to the pole E, and attached at the other to the membrane M.

I have already stated that the armature was first attached to the electro-magnet by means of a pivot. Subsequently, the uncovered leg E of the electro-magnet was filed to a sort of knife edge, and the end of the armature A was attached to it by means of a leather hinge, as shown in the drawing of the second instrument, which will be described further on. The operator spoke into the tube T and listened at it when receiving. I cannot say that we spoke and listened exclusively at the end of the tube T. My recollection is, that we spoke to the instrument and listened to it, holding it in various positions with relation to the mouth and ear.

I will now describe the drawings of the second instrument of 1875.



BELL'S FIRST TELEPHONE OF 1875.
Scale of Section, one fourth size.

As appears from the drawings, it was like the first, excepting in the following particulars: The straining ring R had a wooden flange, instead of brass projections for the adjusting screws; the tube T was shorter, which, I presume, caused a corresponding shortening of the side-pieces U. In this instrument, a steel spring armature was used, attached on the one hand to the uncovered pole E of the electro-magnet by a leather hinge, and on the other to the membrane by a brass pillar, screw, and washers, as shown. I think I remember that in the first instrument, as first constructed, the adjustment of the pole C of the electro-magnet was accomplished by means of the screw N (shown in the first drawing) and metal washers, the cross-bar B being fixed. My impression is that the movement of the cross-bar in the slots of the side-pieces was a subsequent improvement, when the magnet was rigidly attached, by a screw, to the cross-bar.

I find, by looking at my former deposition, at the bottom of page 139, (given in 1879,) that I there stated that "the uncovered leg of the mag-"net to which the armature was attached was removed a day or two "after the original instrument was constructed, and another substituted "for it. The pole of the uncovered leg was filed to an edge, and a steel "reed was hinged to it by means of a strip of leather. This substitute "is the one now attached to the original magnet produced." That agrees with my present recollection.

I have before me the original electro-magnet, and thick and thin pivoted armatures, already referred to.

Cross-Q. 299. Inasmuch as the uncovered leg now attached to the electro-magnet to which you have just referred, is the improved leg adapted to the screw, O, and the leather hinge, are you able to produce the original leg for which this was substituted or has it disappeared?

Ans. I am unable to produce it, and do not know where it is.

Cross-Q. 300. There are two armatures attached to the electro-magnet last referred to. How are you able to identify them as being original armatures and not reproductions?

Ans. I remember them, and no others like them were constructed until the evidence in the Dowd case was taken.

Cross-Q. 301. Both of these armatures have provision for a pivot hinge, hence I suppose they were both used with the first instrument, and were the first armatures used with that instrument; am I right?

Ans. Yes.

Cross-Q. 302. Are you able to produce any of the armatures that were used with either of those instruments of July, 1875, with a leather hinge?

Ans. No.

Cross-Q. 303. How did the armatures which were used with a leather hinge in June or July, 1875, compare with these two armatures in size, dimensions, weight, etc.?

Ans. My recollection is that they were substantially similar to the lighter of the two armatures, but I am unable to give the details required.

Cross-Q. 304. You have stated that after the membrane had been torn by the action of the electro-magnet, a thicker membrane was adopted; please state the materials of the different membranes to which you refer, and give us as definite an idea as you can of their actual and relative thickness.

Ans. The first membrane was made of gold-beaters' skin, as usually found in the market. This proved insufficient for the strain put upon it by the magnet, and we adopted a plan of using more than one layer of gold-beaters' skin. I believe we also employed membranes of other material, but I can only give my general recollection, and cannot say positively at the present moment that this was the case. I had made numerous experiments with phonautographs, constructed by myself, in which the membrane employed consisted of bladder, and it is my impression that some of our membranes were constructed of this material. I cannot give any definite idea of the actual thickness of the membranes. We simply tried to make them sufficiently stout and tense to stand the pull of the electro-magnet.

Cross-Q. 305. By "we," I suppose you mean yourself and Mr. Watson; do you not?

Ans. Yes.

Cross-Q. 306. Can you furnish us the *data* from which we may know or be able to calculate the electro-motive force of the electro-magnet which you used in those experiments, and which you say tore the membrane?

Ans. My impression is that the battery employed consisted of hollow zinc cylinders in dilute sulphuric acid, and a carbon rod in an acid solution of bichromate of potash in a porous cup. I cannot be absolutely sure at this late date whether such was the kind of battery employed,

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but such is my impression. My impression is, also, that one cell of this battery caused the electro-magnet to attract its armature with sufficient force to rupture the membrane in the first experiments made.

The core C of the electro-magnet is $1\frac{5}{8}$ inches long; the end of the core that shows is $\frac{7}{16}$ inch in diameter, but I don't know whether the core is the same diameter all through, or whether the part that shows is merely an enlarged pole piece. The diameter of the coil is $1\frac{3}{16}$ inches; the length $1\frac{1}{2}$ inches. I should judge, by the eye, that the wire is about No. 23, silk covered.

Cross-Q. 307. Will you give the dimensions of the bent iron bar which serves as the heel piece and the uncovered leg of said electro-magnet?

Ans. This was formed of a strip of iron $\frac{1}{2}$ inch wide and $\frac{1}{8}$ thick. The uncovered leg is $1\frac{7}{8}$ inches long outside measure, and the heel piece, from the center of the core to the outside of the angle of the leg, is $1\frac{11}{16}$ inches.

Cross-Q. 308. Please give the dimensions of the two armatures now present and tied to said electro-magnet.

Ans. The heavy armature is $\frac{1}{2}$ inch wide, $\frac{7}{64}$ of an inch thick, and $2\frac{1}{8}$ inches from the center of the pivot to the extremity of the free end. The thin one is the same width and length, and a trifle more than $\frac{1}{64}$ of an inch thick.

Cross-Q. 309. If I understand you correctly, the cork connection from the armature to the diaphragm was not used after you employed the metal pillars which are shown attached to these armatures; am I right?

Ans. I do not know; my impression is that it was frequently used.

Cross-Q. 310. The connecting of the armature to the uncovered leg by means of a leather hinge, was the last of all the improvements which you made on these machines of July, 1875; was it not?

Ans. I cannot say. I have described various modifications that were made during June or July, 1875, but I am not perfectly sure as to the order in which they were made. I had been in the habit of using leather hinges in experimental forms of phonautographs, and I therefore tried the effect of similar leather hinges after the pivot hinges had been made; my impression is that I preferred the pivot hinge.

Cross-Q. 311. When you ceased your experiments with these two machines about the end of July, 1875, what was their condition at that

time with reference to the armature hinge; was it a pivot hinge or a leather hinge at that time?

Ans. I do not know; my impression is that, as we had both forms at hand, we tried sometimes one, sometimes the other.

Cross-Q. 312. Will you please give the dimensions of the brass pillars which are attached to the two armatures here before us and intended for connecting them to the diaphragm?

Ans. The pillar attached to the thin armature is a solid cylinder $\frac{17}{64}$ or an inch in length, $\frac{15}{64}$ in diameter.

It is riveted to the armature at one end, and the other end carries a screw and a washer.

The one attached to the thick armature projects $\frac{5}{32}$ of an inch from the armature, is $\frac{11}{64}$ in diameter, it is hollow; one end is attached to the armature by being screwed into it; the other carries a screw and washer.

Cross-Q. 313. I infer from your previous testimony that your assistant, Mr. Watson, made the two membrane instruments, about which you have been testifying, and also made all the changes or modifications which were made on them prior to the date of your patent; am I correct?

Ans. He either made them himself, or superintended the manufacture of the instruments and the alterations.

Cross-Q. 314. In your letter to Mr. Hubbard of July 1, 1875, (page 143 of complainants' printed record,) you refer to an experiment made that afternoon; the transmitting instrument used in that experiment was one of the two machines about which you have been testifying; was it not?

Ans. Yes, it was the first one.

Cross-Q. 315. Do you remember the condition of that machine at the time of that experiment—whether it was before the improvements had been made, or whether any, and if so which, of the improvements had been applied to it, and was used on it at that time?

Ans. I do not remember. My recollection of the experiment is derived simply from the letter.

Cross-Q. 316. I see no indication in the letter that, in that experiment of July first, there was any trouble from the rupture of the membrane or detachment of the armature therefrom, and hence I judge that you had already before that date gotten over those two difficulties; what is your recollection or opinion about that?

Ans. My impression agrees with that, although no mention of a battery as having been used is made, so that the membrane would not have been likely to be ruptured. My impression that the improvements to obviate this had already been made, is based upon the fact that I gave orders for the construction of the instrument on the second of June, whereas this experiment did not take place until the first of July. I was so anxious to try the experiment, that it must certainly have been made at the earliest possible moment the instrument could have been used. It is possible, however, nay, probable, from the first line of the letter of July first, that the experiment had been previously tried with indifferent or doubtful results. My opinion is that experiments had been tried and modifications made before the date of this letter, but I cannot be absolutely certain about it.

Adjourned to February 22nd.

FEBRUARY 22, 1883.

Cross-Q. 317. You have in your evidence referred to an experiment made June 2, 1875, which resulted in an accidental discovery by you on that day. Will you please give a particular description of that experiment, including a description of the apparatus with which it was made, all the conditions under which the experiment was made, and a statement of the discovery which resulted that day?

Ans. I was testing the apparatus I had devised for the purposes of multiple telegraphy, and had arranged three experimental telegraph stations in the upper part of Mr. Williams's workshop. The first and second stations were in one room under my own eye; the third station was outside of the room, under the charge of Mr. Thomas Watson.

Station 1. At station 1 were three transmitting instruments, consisting of tuned reeds adapted in vibrating to interrupt the electrical current from the main line at each vibration. Each reed was tuned to a different pitch, that is it was adapted to vibrate normally at a different rate from the others. Connected with each tuned interrupter was an ordinary telegraph key, by the depression of which the interrupter could be thrown into the main circuit. The transmitters were normally unconnected with the main circuit, but by means of the telegraph keys they could be connected successively or simultaneously with the line-wire.

Station 2. At station 2 were arranged three tuned receivers A, B, C, like those shown in figures 5 and 6 of my March 7, 1876, patent. A steel spring armature was clamped firmly to one pole of an electro-magnet, the free end of the reed projecting above the other pole. The coil was on only one of the legs of the magnet, as shown in figures 5 and 6 of the patent.

In the experiment referred to, the reeds A, B, C of the receivers had been tuned to the same pitches as the reeds A, B, C of the transmitters in station 1.

Station 3. In this station were arranged three receiving instruments like those in station 2, the reeds of which, A, B, C were tuned to the same pitches as the transmitters and receivers in stations 1 and 2, designated by the same letters.

Thus at all the stations the reed of the transmitter and receiver called A had the same pitch or normal rate of vibration. So with B and C.

It will be understood, that, although there were three instruments at each station, the stations were connected by a single line wire, the receiving instruments at each station being connected with the line, either in series or in multiple arc, I do not remember which. A return wire, to represent the earth, connected stations 3 and 1.

The Experiment. Mr. Watson and I were engaged in adjusting the instruments, as a preliminary to an intended experiment of transmitting simultaneously along the line three series of telegraphic signals—that is, of musical sounds broken into dots and dashes. If the instruments were properly adjusted, the manipulation of the telegraph key attached to the transmitter A, in station 1, should alternately cause and interrupt the forcible vibration of the receivers A, at stations 2 and 3, but not of the other receivers. Each receiver A would then vibrate so as to produce its fundamental sound, and the amplitude of the vibration should be great enough to be visible to the eye. One of the particular purposes for which I was making these instruments contemplated that the vibrations should be great enough to be seen and mechanically utilized, as well as to be heard. I commenced the experiment, therefore, by depressing one of the telegraph keys A, and then examined the reeds of the receivers A, B, C, at station 2, so as to be sure that they had been so adjusted that the reed A would be thrown into good vibration, while the reeds B and C would not. At the same time, Mr. Watson examined the receivers of station 3. If everything was all right at his station, I would then lift the manipulating key A, at station 1, and depress, instead, the key

B. After satisfying ourselves that the reeds of the receivers B, at stations 2 and 3, were the only ones that were thrown into forcible vibration, we proceeded to test the next series of instruments C. Occasionally, we would find that one of the reeds of the receivers had been so closely adjusted to the pole of the electro-magnet underneath it that it would stick to the magnet, instead of vibrating freely. We would then pluck the reed to release it, and if we found that it still had a tendency to remain adherent, we would bend the reed, so as to increase its normal distance from the pole of the magnet.

While we were applying one of the tests described above, that is, while I kept one of the keys at station 1 (say key B) depressed, and while I was examining the corresponding receiver at station 2, Mr. Watson called out that the reed of his receiver at station 3 was sticking against the pole of its electro-magnet, and I told him to pluck it. At this time, of course, my eyes were fixed upon the proper receiver at station 2, and I was surprised to observe the reed of that receiver thrown into good vibration at the moment he had plucked the reed. My impression is, although I am not quite sure, that I had at this time opened the circuit at station 1, by the elevation of the key, so that there was no battery upon the circuit at the time. At all events the reed of the receiver at station 2 vibrated at a time when no vibration was expected, so that the fact of its vibration immediately attracted my attention. I therefore kept Mr. Watson plucking the reed at station 3 while I made various changes at stations 1 and 2. These changes proved that the vibration I had observed had been indeed caused by the plucking of the reed at station 3, even when there was no battery upon the circuit at the time. To make the matter perfectly sure we separated the receivers B of stations 2 and 3, and connected them upon a circuit by themselves, as shown in Fig. 5, of my March 7, 1876, patent, but without any battery in the circuit. Upon plucking the reed of one of the receivers the reed of the other was thrown into very considerable vibration. The vibrations produced by the plucking were still more intense when a battery was included in the circuit, as shown in Fig. 5 of the patent. A number of experiments were made to prove that the considerable amplitude of movement noticed was not caused by any vibration mechanically conducted along the wire from one instrument to the other, but that the vibration of the receiving reed was due to electrical undulations caused by the vibration of the transmitting reed.

The Discovery. The discovery, therefore, that was made on the 2d of June, 1875, was that the vibrations caused in the armature of a re-

ceiving instrument by electrical undulations occasioned by the vibration of the armature of another instrument in the same circuit as the first would be of very considerable force. As I have already explained, I had had the idea since the summer of 1874 that vibrations produced in this way would be of very slight amplitude, and that they might not prove sufficiently violent to produce audible effects that would prove practically useful either for the purpose of the reproduction of articulate speech, or for the purposes of multiple telegraphy.

The experiments described above, convinced me that this was a mistake. The vibrations produced in tuned reeds were so great in amplitude, that I felt sure that they were even sufficiently great to be mechanically utilized in my system of multiple telegraphy. Even when the reeds of the two instruments connected in circuit as shown in Fig. 5 of my patent of March 7, 1876, (but without a battery) were not in tune with one another, that is:—did not have the same normal rate of vibration, the feeble forced vibrations electrically produced in the one by the mechanical plucking of the other—though barely sufficient to produce a visible motion—were quite sufficient to cause a very perceptible sound. I placed my ear against the reed of one of the instruments, while Mr. Watson plucked the reed of the other, and distinctly heard a musical tone at every pluck, the pitch of which was not that normally produced by the instrument at my ear, but was the pitch of the other which had been plucked by Mr. Watson. In this experiment also the effects were perfectly well produced without any battery upon the circuit, and without any other source of permanent magnetism, than the feeble charge in the thin steel spring armature that would probably be caused by previous experiments with batteries, or the residual magnetism of the soft iron cores due to the same experiments.

These results, therefore, satisfied me that I had very much underrated the power of undulatory electrical currents produced by the vibration of an armature to produce audible sonorous effects, and convinced me in a moment that the speaking telephone I had devised in the summer of 1874 would, if constructed, prove a practically operative instrument.

I have not described in detail the construction of the transmitting instruments used at station 1 to make and break the electrical circuit, as I thought such description unnecessary to the comprehension of the specific experiments inquired about.

Cross-Q. 318. In your patent of March 7, 1876, I understand Fig. 6 of the drawings to represent three stations of a harmonic or multiple tele-

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ticulate speech could be reproduced by any apparatus interrupting the electrical circuit, hence I presume that the question refers entirely to apparatus used in my system of multiple telegraphy.

Cross-Q. 323. Your belief that when it was designed to transmit many Morse messages simultaneously on the same circuit, the magneto reed instruments would permit of the transmission of a very much larger number of messages without interference with one another than would be possible with circuit interrupters, was a belief which had its origin in the experiment of June 2, 1875, and in the discovery which you made that day; was it not?

Ans. No; it had its origin long before, but I had feared until the 2d of June, 1875, that the instruments might not prove in practice as perfectly adapted for my purposes—on account of the feebleness of the vibrations in the receiving reeds—as they were in theory. My thorough and complete belief in the practicability of using such instruments in anything more than laboratory experiments dates from the experiment referred to. All the theoretical part had been developed long before that time. There was only one difficulty in my mind—the supposed feebleness of the effect. The discovery of June 2 simply removed this difficulty.

Cross-Q. 324. Then the discovery of June 2 consisted simply in this, that the magneto current produced by vibrating an armature in front of the pole of an electro-magnet was stronger than you had supposed; is that the fact?

Ans. Partly. The chief difficulty in my mind was as to the violence of the sonorous effect at the receiving end produced by the action of this current. I had feared that it might not be sufficiently audible for practical purposes. The discovery of June 2 consisted chiefly in this—that it was.

Cross-Q. 325. And when you had made that discovery, then you availed yourself of it by re-organizing your apparatus upon the plan shown in Fig. 6 of your patent of March 7, 1876, as one result of the discovery; did you not?

Ans. Certainly, but I do not think I did so immediately. The moment the discovery was made, the practicability of the speaking telephone devised by me in 1874 flashed upon me, and I instantly gave instructions to have the instrument made. I was too much excited over this to attach more than secondary importance to multiple telegraphy at the time. I had already, as I have stated above, arrived theoretically at the arrangements shown in Fig. 6, and within the next few days after June 2, and

on that day I made experiments that demonstrated to my mind that the whole arrangement shown in Fig. 6 was practicable.

Cross-Q. 326. When did you for the first time actually put together and experimentally operate a system substantially the same as that shown in figure 6 of said patent?

Ans. I cannot say precisely, but somewhere in June or July, 1875; I think in June.

Cross-Q. 327. And when did you for the first time actually put together and experimentally operate the combination of instrumentalities as shown in figure 5 of said patent drawing?

Ans. June 2, 1875.

Cross-Q. 328. At the beginning of your experiment of June 2, 1875, you already had in your possession, previously constructed, all of the several instrumentalities shown in said figures 5 and 6, but had never combined them together as there shown, if I understand you; am I right?

Ans. I had never combined the instruments in figures 5 and 6 purposely as shown, but I have no doubt that they were often previously combined in that way in my experiments unintentionally.

Cross-Q. 329. And until June 2, 1875, without the discovery of any practical utility in so combining them?

Ans. The only utility I had in view in such experiments, was their use as receivers for current-interrupting transmitters.

Cross-Q. 330. How long prior to June 2, 1875, had you had in your possession instruments substantially like the magneto receivers or transmitters shown in figures 5 and 6?

Ans. The instruments shown in figures 1 and 3, pages 109 and 111 of my deposition, I had in November, 1873, as there stated. I consider them substantially the same for the purposes of this question, though there are some differences of construction which I can explain if required. The instruments of figure 5 of the patent are improved forms of the same receiving instruments shown on pages 109 and 111 of my deposition. I should think that such instruments might be substituted for those shown in figures 5 and 6 of the patent, with substantially the same results.

Adjourned to February 23.

February 23, 1883.

Cross-Q. 331. How long prior to June second, 1875, had you known that if a permanent magnet be vibrated in front of the pole or poles of

an electro-magnet in a closed circuit, and sufficiently near to bring the electro-magnet within the field of force of the permanent magnet, electric currents would thereby be caused to traverse the circuit in alternately opposite directions, even though there were no battery included in the circuit?

Ans. I do not know. I had all the knowledge necessary to know this, if I had thought about the matter, when I first took up the study of electricity; certainly previously to 1870, the date of my coming to this continent. I am not conscious of having thought of applying this to vibrations coming with the frequency of an audible sound, for the purposes of my inventions, until the summer of 1874.

Cross-Q. 332. How long prior to June 2, 1875, had you known that if an electro-magnet be included in a closed circuit with a battery, and a plate or armature of inductive material be vibrated in front of the pole of the electro-magnet and within its field of force, electrical undulations would thereby be set up in or transmitted through the circuit?

Ans. I am not conscious of having thought of this until the summer of 1874.

Cross-Q. 333. Do you claim to be the first discoverer of the effects stated in my last two questions or either of them, or were they known to other electricians prior to your investigations?

[*Objected to as immaterial.*]

Ans. I think that the state of knowledge at the time I made my discoveries was such that the effects stated could have been deduced from the premises supposed. I believe myself to have been the first person to have made the deductions, and to have applied them to the case of the sonorous vibration of a permanent magnet, or plate, or armature of inductive material in front of the pole or poles of an electro-magnet placed in a closed circuit as stated.

Cross-Q. 334. Was not the state of knowledge at the time you made your discoveries such that the effects stated in my said two questions were actually known to electricians to result from the conditions stated in said questions; and this question I ask, as I asked the others, without reference to the application of such knowledge in the transmission of sound vibrations.

[*Complainants' counsel inquires whether the examining counsel means to use the word "vibrate" in the sense of motions of such rapidity as belong to sonorous vibrations, or whether he means to include any case where a perma-*

nent magnet is caused to approach the poles of an electro-magnet and afterwards to recede therefrom.

Respondents' counsel replies that in the interrogatories referred to he uses the word "vibrate" in its ordinary and well-known sense, and in his present interrogatory he has specifically stated that he used it without reference to the application of such knowledge in the transmission of sound vibrations.

Complainants' counsel states that his request does not refer to the purposes for which the movement is employed, but to the kind of movement of the permanent magnet or armature, and in order that the question may be relieved from ambiguity, he still thinks that it should state whether it refers to the one kind of movement or to the other, or whether it includes them both.

Respondents' counsel replies that the witness may answer the question, assuming the word "vibrate" to be used in the sense of alternately approach and recede from.

Complainants' counsel now objects to the question, for the reason that the state of knowledge which he understands to be inquired of by the question, as he understands it is to be now construed, is stated by the patent itself to have been long known and to form no part of the invention, in the passage of the patent at the top of page 57 of complainants' evidence, and, therefore, that the question is immaterial.]

Ans. My inventions and researches had reference entirely to vibrations that would produce the sensation of sound, and I do not believe that the effects stated in your two questions were actually known to electricians before I deduced them, although, as I have stated, the state of knowledge at the time was such that they might have been deduced.

In regard to vibrations in the simple sense of a to-and-fro movement, without reference to a movement of such character as to produce the sensation of sound, I said in my patent of March 7, 1876:

"It has long been known that when a permanent magnet is caused to approach the pole of an electro-magnet, a current of electricity is induced in the coils of the latter, and that when it is made to recede a current of opposite polarity to the first appears upon the wire."

In regard to the conditions stated in cross-question 332, I do not know exactly how much was actually known to electricians at the date of my discoveries in reference to simple to-and-fro motions, but it is obvious that whatever effects might have been positively known regarding the to-and-fro motion of permanent magnets in front of electro-magnets would also have been presumed to follow in the case of plates or armatures of induc-

tive material moved to-and-fro in front of the pole of an electro-magnet excited by a battery current.

Cross-Q. 335. So that you did not discover that the to-and-fro movement of the magnet of inductive material under the conditions stated in my said two questions would produce the effect there referred to, to wit: The undulatory or vibratory current upon the line; but you did discover that if said to-and-fro movements were made to follow each other with sufficient rapidity to bring their vibration within the limits of sound vibrations, the effect referred to would still follow; am I correct?

[*Same objection.*]

Ans. I deduced from the known laws of magneto-electricity that the variations in the electrical current induced by the to-and-fro movement of a magnet, or of inductive material under the conditions stated in your two questions, would correspond to the motions themselves; so that if the changes in the current were graphically shown, they would be represented by a curve substantially similar to the curve that would represent the motion of the inducing body. In answer to the first part of the question; there was nothing in the state of knowledge to have prevented anyone from arriving at this conclusion in the case of to-and-fro movements at the time that I did, but I do not believe that anyone had arrived at this result.

In regard to the second part of the question, I believe that I was also the first to discover that if the said to-and-fro movements were made to follow each other with sufficient rapidity to bring their vibration within the limits of sound vibrations, the effect referred to would still follow, namely: That the undulatory or vibratory current would correspond in character to the character of the vibration that caused it, and hence to the character of the aerial motions produced by that vibration. That is, that the variation in the current would not only correspond in frequency to the rapidity of the sonorous vibrations, but would also correspond to those minor details of the vibration that determine what we call the character or the quality of the sound produced.

Cross-Q. 336. And when do you date that discovery last referred to?

Ans. In the summer of 1874.

Cross-Q. 337. Can you not approximate the exact time more closely than by the general expression "summer of 1874?"

Ans. I only know that it was made during my summer vacation in 1874, and that I described the idea to friends in Canada in July of that year. That is as near an approximation to the date as I can give.

Cross-Q. 338. As you did not return from your vacation until about October 1, 1874, (see answer 45, page 121, of complainants' printed record,) are you sure that you described your ideas prior to September: and if so, how do you know?

Ans. Perfectly certain. I remember that the description referred to took place soon after my arrival in Canada in that summer of 1874.

Cross-Q. 339. Passing now from your deductions in the summer of 1874 to your discovery of June 2, 1875, which you state in your 317th answer, was as follows: "That the vibrations caused in the armature of a "receiving instrument by electrical undulations occasioned by the vibra- "tions of the armature of another instrument in the same circuit as the first, "would be of very considerable force;" that discovery had reference to the force of the vibrations caused in the armature of a receiving instrument by electrical undulations occasioned by the vibrations of the armature of another instrument in the same circuit, without a battery in the circuit; had it not?

Ans. It was the production of the effects without a battery upon the circuit that chiefly convinced me of this, namely: That vibration produced in the receiving armature in the manner indicated, "would prove suffi- "ciently violent to produce audible effects that would prove practically "useful, either for the purpose of the reproduction of articulate speech "or for the purpose of multiple telegraphy," as stated in my description of the discovery referred to, (see my answer to cross-question 317, page 1591); but the passage quoted in the question did not refer exclusively to cases where no battery was used.

Cross-Q. 340. Then prior to June second, 1875, if I understand you, you did not believe that the vibrations caused in the armature of a receiving instrument by electrical undulations occasioned by the vibration of the armature of another instrument in the same circuit as the first, would be of sufficient force to prove practically useful for either of the purposes you have mentioned—that is, the purpose of reproducing articulate speech, or the purposes of multiple telegraphy—whether a permanent magnet were vibrated in front of an electro-magnet without a battery in circuit, or a plate of inductive material were vibrated in front of an electro-magnet with a battery in circuit; am I correct?

Ans. I was extremely doubtful; I hoped that they might prove of sufficient force, but was unable to decide simply from the state of knowledge at the time, without practical experiments to test the point.

Cross-Q. 341. Did you regard the point as one of great importance to be determined?

Ans. For the purpose of multiple telegraphy I did not consider it of so much importance, until after I had determined whether or not a large number of Morse messages could be transmitted without interference with one another by interrupted currents, for I always thought that whatever audible effects would be produced in the way referred to in the question, the musical tones produced by interrupted currents would be much louder, and, therefore, for the purposes of multiple telegraphy, of more practical importance than those produced in the other way.

The chief value of the undulatory current for the purposes of multiple telegraphy appeared to me to lie in the possibility of transmitting a very much larger number of musical signals, hence messages, without interference, than could be possible with the intermittent plan.

For the purpose of reproducing articulate speech by electrical means I regarded the point inquired about as of great importance.

Cross-Q. 342. From the summer of 1874 till at least as late as June 2, 1875, your experimental work was confined almost, if not quite, exclusively to your multiple telegraph inventions, was it not?

Ans. Yes, excepting so far as my professional experiments in teaching correct articulation to deaf mutes and persons with defective speech was concerned. During the early part of the period referred to my professional experiments occupied most of my time.

Cross-Q. 343. Within the period I have mentioned in my last question how many patents did you take out or apply for in this country on inventions relating to multiple telegraphs; and will you state the particular subjects of said inventions, the dates when the applications were filed, and the dates when the patents were granted?

Ans. 1. Application, February 25, 1875. Multiple telegraphy; circuit-breaking vibrators for transmitters and tuned reed receivers; patent not issued; in interference with Gray.

2. Application, March 6, 1875. Vibratory circuit-breaker and autograph telegraph. Patented as No. 161,709, April 6, 1875.

3. Application, March 10, 1875. Multiple telegraph circuit-breaking transmitters used with induction coils; in interference with Gray; patent not issued.

Cross-Q. 344. Then the doubt which you speak of in your 340th answer was so strong and the hope so weak, that although the generation of undulatory currents in a circuit by the inductive energy of a vibra-

ting magnet or plate in front of the pole of an electro-magnet suggested itself to your mind as early as July, 1874; and, although for the purpose of reproducing articulate speech by electrical means it was of the greatest importance to determine whether electric undulations so caused in the line would produce sonorous vibrations at the receiving reed or not; and, although you had in your possession all the instrumentalities necessary for the demonstration of that question; and, although having those instrumentalities the experiment was an exceedingly easy one to make; yet, from July, 1874, till June 2, 1875, you never made the experiment nor attempted to make it, nor attempted to ascertain whether your doubt was well founded or not, and the experiment of June 2, 1875, which finally resolved your doubt, was an experiment relating to the multiple telegraph, in which the resolving of your doubt was purely an accidental matter; am I correct?

Ans. I would rather say that the points alluded to can only be satisfactorily understood by the thorough understanding of my circumstances of life at the time, and the difficulties under which I labored.

In the first place it will be understood that I was dependent upon my professional exertions for support; and in the second place that I was in honor pledged to the capitalists who supplied the money for my experiments, to devote all my spare time and thoughts to the development of multiple telegraphy.

My professional labors consisted:

1. In the preparation and delivery of courses of lectures at the Boston University upon vocal physiology.

2. In the preparation and delivery of courses of lectures upon the subject of teaching articulation to the deaf and dumb, which were given to a special class formed exclusively of teachers of the deaf and dumb, who were sent to me from the various institutions in the country, and of persons who were desirous of qualifying themselves to become articulation teachers of the deaf and dumb.

3. In addition to these courses of lectures I experimentally demonstrated the methods of teaching articulation to the deaf by giving personal instruction to individual pupils who were deaf and dumb.

4. I supplemented my lectures in the Boston University on vocal physiology, by experimental demonstration of the practicability of correcting stammering, stuttering, lisping, burring, and other defects of speech by giving private individual instruction to pupils with defective speech; and

5. In addition to these professional labors, I was also undertaking,

as an experiment that interested me, the general education of a very young deaf-mute child.

It will, therefore, easily be understood that in the autumn of 1874 my time was completely occupied from morning till night with these occupations. My experiments and researches upon other subjects had to be done exclusively at night, after other people were in bed and asleep, excepting upon Sundays and holidays. It will also be understood that the income I derived from these professional labors was a fairly good one, and it was my only means of support.

Some time in the autumn of 1874, Mr. Thomas Sanders and Mr. Gardiner G. Hubbard became interested in my inventions, and specially in the invention of multiple telegraphy. An arrangement was entered into by which it was understood that they would pay the expense of the construction of experimental apparatus by properly skilled mechanics, and the expense of patent applications in the United States, and of any interferences or lawsuits that might arise; and I, on the other hand, agreed to give up a portion of my professional work for the purpose of devoting time to the experimental details of the system of multiply telegraphy. I had hoped and expected to have supported myself by my professional exertions, and at the same time to have been able to afford time for the prosecution of my experiments in multiple telegraphy.

In October, 1874, a caveat for the multiple telegraph, which had been prepared by me, was forwarded to Washington to be filed in the Patent-Office; but, upon consultation, Mr. Hubbard decided that, as the invention was substantially complete, applications for letters patent should be made instead. When these applications were filed in the Patent-Office I was soon thrown into interference with Mr. Elisha Gray, who had developed a somewhat similar system of multiple telegraphy. This circumstance threw me into a fever of excitement. I feared that I might lose the fruits of laborious researches carried on for years under great difficulties, and I, therefore, devoted every moment I could spare to the development of multiple telegraphy. Indeed, I devoted to this subject more time than I could spare, for it led to the subordination and partial neglect of my professional work, so that I was soon in such a position that I was not earning my support. In addition to this, my close application to this subject and the worry and anxiety under which I labored began to affect my health, and at last I was forced to make a change. On the 18th of March, 1875, matters had come to such a pass that I

wrote to my father and mother, in a letter shown on p. 125, complainants' record, as follows:

"I have just returned from my trip to New York thoroughly worn out. Found your letters of the 14th inst. awaiting me. I am now beginning to realize the cares and anxieties of being an inventor. In order to complete the apparatus as thoroughly as possible I have decided to give up all professional work for some weeks. I have put off all pupils and classes until the 12th of April. Flesh and blood could not stand much longer such a strain as I have had upon me. Professional work is all in confusion, and the only way is to cut the Gordian knot and throw up everything until the end is achieved."

(Adjourned to February 24.)

February 24.

(The witness continues:)

During this period it must not be supposed that I had forgotten or neglected my ideas concerning the speaking telephone. Although, as stated above, I felt it my duty to devote all my spare time and thoughts to the development of multiple telegraphy, I could not help thinking and dreaming of the speaking telephone. It was constantly in my mind. I had explained my ideas on this subject to friends in Canada in the summer of 1874, and upon my return to the United States in October of that year I explained my ideas upon this subject to Mr. Hubbard and Mr. Sanders, and shortly after the 21st of October to Dr. Clarence J. Blake of Boston. The fact of an explanation of a speaking telephone having been given to Dr. Blake in October, 1874, is impressed upon my memory by the fact that this explanation was the result of a letter I had received from him dated October 21, 1874, (printed on page 342 of complainants' record,) in which he used the following remarkable expression which at once riveted my attention. "I have received a "letter from the Royal Institute from Elisha Gray concerning his exper- "iments in telegraphing vocal sounds, which you will be glad to see."

My fears were at once aroused. I was afraid that some one else was at work upon the speaking telephone. I visited Dr. Blake within a few days of the receipt of his letter, not for the purpose of learning what Mr. Gray or anyone else had done in this line, but 1. For the purpose of describing to him the method and apparatus that I had devised for the reproduction of articulate speech by electrical means. 2. And for the purpose of seeking his advice concerning the operation of the membrane telephone I had devised, as he was a scientific man of eminence

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who had devoted much time and thought to acoustical subjects, and specially to the subject of the vibration of loaded membranes like that of the human ear and in the Scott phonautograph. I remember very distinctly that these were the objects with which I visited Dr. Blake and I remember also that I refused to see the letter from Mr. Elisha Gray in spite of Dr. Blake's assurance that it had nothing to do with vocal sounds.

By Mr. Hubbard's advice, I explained my ideas concerning multiple telegraphy and the speaking telephone, confidentially, about this time (the latter part of October or the early part of November, 1874,) to several scientific gentlemen whose names I have forgotten, with the exception of Mr. Moses G. Farmer and Prof. Lovering, of Harvard College.

In the letter to my father and mother, dated March 18th, 1875, from which I have quoted above, occurs the following account of my explanation of the speaking telephone to the late Prof. Henry at Washington. (See page 126 of complainants' evidence.)

"I felt so much encouraged by his interest, that I determined to ask his advice about the apparatus I have designed for the transmission of the human voice by telegraph. I explained the idea, and said: 'What would you advise me to do—publish it and let others work it out or attempt to solve the problem myself?' He said he thought it was the germ of a great invention, and advised me to work at it myself instead of publishing. I said that I recognized the fact that there were mechanical difficulties in the way that rendered the plan impracticable at the present time. I added that I felt I had not the electrical knowledge necessary to overcome the difficulties. His laconic answer was, 'Get it.'

"I cannot tell you how much these two words have encouraged me. I live too much in an atmosphere of discouragement for scientific pursuits. Good ——— is unfortunately one of the *cui bono* people, and is too much in the habit of looking at the dark side of things. Such a chimerical idea as telegraphing *vocal sounds* would indeed, to most minds, seem scarcely feasible enough to spend time in working over. I believe, however, that it is feasible and that I have got the cue to the solution of the problem."

The appreciation of Professor Henry acted as a stimulus to the development of the speaking telephone. In spite of my efforts to concentrate my thoughts upon multiple telegraphy, as Mr. Sanders and Mr. Hubbard wished me to do, my mind was full of it. All that I read upon electrical subjects seemed to be viewed from the stand-point of the speaking telephone, and some time during March or April, 1875, certainly earlier than the 4th of May, I obtained what I considered a clew out of the theoretical difficulties in the way of the realization of my idea. It

will be remembered that the theoretical difficulty arose from the fact that I proposed in my first speaking telephones to generate the electrical current employed by the action of the voice itself, hence the sounds produced by the receiving telephone would necessarily be much feebler than those that actuated the transmitting-telephone, and I feared they might not be sufficiently loud for practical purposes. The new idea was to generate the current independently of the voice itself, and use the latter simply to control the strength of the current upon the line. This result I thought could be obtained by causing the resistance of a galvanic circuit to be varied by the action of the voice. I presumed that the relative variations in the current, that is, that the electrical undulations which were like the sound vibrations, would be controlled by the action of the voice, while the absolute strength of the current would depend upon the power of the battery employed. So far, then, as the development of the speaking telephone was concerned, my attention was devoted almost exclusively between the date of the above conception until the 2d of June, 1875, in attempting to devise means whereby my membrane telephone, instead of generating an undulatory current, should be employed to produce electrical undulations in a current already existent upon the line by causing the resistance of the circuit to be varied in a manner corresponding to the details of the sound vibrations. I had the idea that the resulting sounds produced from a membrane telephone receiver, like that I devised in 1874, if placed in the circuit, would be much louder than in the case of the magneto-electric telephone, and I hoped that the loudness of the sound might be more nearly proportional to the power of the battery than to the loudness of the speaker's voice. One of the means I devised at this time for this purpose is described in a letter to Mr. Hubbard, dated May 4, 1875, (see p. 129 of complainants' evidence,) and I quote from this letter the following passage, italicized as in the original.

"Another experiment has occurred to me, which, if successful, will pave the way for still greater results than any yet obtained. The strings of a musical instrument in vibrating undergo great changes of *molecular tension*. In fact the vibration represents the struggle between the tension of the string and the moving force impressed upon it. I have read somewhere that the resistance offered by a wire to the passage of an electrical current is affected by the *tension of the wire*. If this is so, a *continuous current of electricity* passed through a vibrating wire should meet with a varying resistance, and hence a pulsatory action should be induced in the current. If this turns out to be the case, the oscillations of the current should correspond in *amplitude* as well as in the rate of

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movement to the vibrations of the string. One consequence would be that the *timbre* of a sound could be transmitted. The plan for transmitting *timbre* that I explained to you before, viz: Causing permanent magnets to *vibrate* in front of electro-magnets, is chiefly defective on account of the feebleness of the induced currents. If the other plan is successful, the strength of the current can be increased *ad libitum* without destroying the *relative intensities of the vibrations.*"

Previously, then, to June 2, 1875, my experiments relating to the speaking telephone were made entirely with reference to methods of varying the resistance of a circuit, and it did not occur to me to try the experiments referred to in the question, although I had the means at hand, until the discovery of June 2 redirected my attention to the point inquired about. It must be remembered, also, that I considered my legitimate work to be the development of multiple telegraphy, and what time I could spare from this work was necessarily devoted to private teaching. As stated above in the passage quoted from my letter to my father and mother, dated the 18th day of March, 1875, I put off all pupils and classes from the early part of March until the 12th of April. It is hardly necessary to state that by that time my professional work had become thoroughly disorganized, and that I began to be in real want.

Still, the emoluments derived from my connection with the Boston University and the fees received from a few private pupils, gave me a small income which enabled me, by severe economy, to get along. Towards the end of May or the commencement of June, however, I began to feel that a change of some kind was imperatively necessary. My profession was gradually dwindling away, and but for the kindness of my colleague, the late Prof. Lewis B. Monroe, in advancing to me sums of money that would in the future become due to me from my lectures in the Boston University, I would not have been able to get along at all. My pecuniary condition was not known or fully understood by Mr. Sanders and Mr. Hubbard. They had agreed to pay the expenses of my experiments, but no arrangement had been made to remunerate me for my time. On account of the peculiar relations then beginning to arise between myself and Mr. Hubbard, I was unwilling that he should know of the condition in which I was placed, and I could not bear the idea of asking him to modify the arrangement that had been entered into, so as to contribute any money to my support. The peculiar relations to which I refer will be understood when I say that Mr. Hubbard's daughter is now my wife.

Between the summer of 1874 and the 2d of June, 1875, therefore, the

idea of the speaking telephone was constantly in my mind, and experiments were made relating to its development.

I think that I have said enough to explain why it was that the particular experiments referred to in the question were not made at an earlier date than the 2d of June, 1875.

Cross-Q. 345. With two instruments in your possession, substantially such as shown at the ends of the circuit represented in figure 5 of the patent of March 7, 1876, and with a battery in your possession and wires for the transmission of the currents, how much time would it require to connect said two instruments by the wires, with or without the battery in the circuit, and pluck one of the reeds to ascertain whether the other would respond with an audible sound?

Ans. A very short time if I had thought of trying the experiment in Boston, in Mr. Williams' establishment, where the instruments were kept; but a much longer time if the experiment had occurred to me in Salem, Massachusetts, where I was then residing, a distance of about eighteen or twenty miles from Boston.

Cross-Q. 346. I suppose you mean it would have taken a longer time to get to and from the instruments, but not a longer time when you were in their presence, do you not?

Ans. Certainly.

Cross-Q. 347. Inasmuch as you already had in your possession the instruments, the wires, and the battery, the experiment could have been made at any time from the summer of 1874 to June 2, 1875, when you happened to be in the presence of the instruments without the expenditure of one penny of the capital of yourself, Mr. Hubbard, or Mr. Sanders, could it not?

Ans. I think so, although the instruments in my possession in the autumn of 1874, being of my own construction, I felt were too roughly made for me to obtain from them even the results intended for the purposes of multiple telegraphy as satisfactorily as from similar instruments properly made. The first instruments made by a skilled mechanic in the winter of 1874, were not so suitable for the purposes of the experiment referred to in the question.

Cross-Q. 348. The instruments shown in Fig. 5 of the patent of March 7, 1876, are multiple telegraph instruments, are they not?

Ans. They are.

Cross-Q. 349. Mr. Hubbard and Mr. Sanders had undertaken in the

fall of 1874, if I understand you, to defray the expenses of multiple telegraph instruments, and appliances of your invention; am I correct?

Ans. Yes.

Cross-Q. 350. When was Mr. Watson first employed to assist you in your electrical work; I mean when did he first begin to assist you?

Ans. I commenced to have apparatus constructed in the establishment of Mr. Charles Williams, Jr., electrician, No. 109 Court street, Boston, about the beginning of the year 1875, and Mr. Watson was the workman directed by Mr. Williams to make my apparatus. Mr. Watson was not independently employed by Mr. Hubbard, Mr. Sanders, and myself to assist me in my electrical work until somewhere about the latter part of March or the 1st of April, 1876. At least it was after the date of the patent of March 7, 1876.

Cross-Q. 351. From about the 1st of January, 1875, till the end of July, 1875, Mr. Williams was employed to make your machines and apparatus relating to your electrical experiments, and Mr. Watson was his workman assigned to your work as I understand you?

Ans. Yes, but not exclusively assigned to it; he did other work for Mr. Williams, and some of my apparatus was constructed by other workmen under the general superintendence of Mr. Watson.

(Adjourned to February 26.)

February 26.

Cross-Q. 352. Was the contract made between yourself, Mr. Hubbard, and Mr. Sanders, in the fall of 1874, in writing or not?

Ans. I do not think so, but cannot be sure at the present time; my impression is that it was a mere verbal understanding.

Cross-Q. 353. Will you ascertain about it, and if it was in writing, produce it or a duplicate of it during this examination?

Ans. I will.

Cross-Q. 354. Do you know about what time in the fall of 1874 that contract was made, or understanding arrived at?

Ans. In October, 1874, Mr. Sanders offered to assist me, and in consequence of the understanding arrived at with him the caveat for the multiple telegraph was prepared. Before the caveat was sent to Washington Mr. Hubbard became interested with us. This must have been either in the latter part of October, or, perhaps, the beginning of November, 1874; I think October.

Cross-Q. 355. If you had not at that time instruments made in good workmanlike manner, similar to those shown in Fig. 5 of your patent of March 7, 1876, there was nothing to prevent your having them made as soon as Mr. Sanders and Mr. Hubbard had become interested with you, was there?

Ans. As soon as Mr. Hubbard and Mr. Sanders became interested I had instruments made to illustrate the specifications that were prepared, but they were not exactly similar to those shown in Fig. 5 of my patent of March 7, 1876.

Cross-Q. 356. Were they substantially similar?

Ans. They were substantially similar in mode of operation when used as receivers, and were only intended to be so used. The armature of each instrument consisted of an iron weight which was clamped to a brass reed. The normal rate of vibration of this weighted reed could be changed and regulated by shifting the position of the clamp.

Cross-Q. 357. The instruments with which you made the experiment of June 2, 1875, were also intended for receivers, were they not? I mean those that were like the instruments shown in said Fig. 5.

Ans. They were.

Cross-Q. 358. Their reeds, as I understand, were intended to be adjusted to certain normal rates of vibration; how was this adjustment accomplished?

Ans. The reed was clamped on one pole of the magnet with a screw clamp, as shown in complainants' exhibit No. 48, Bell's Harmonic Receiver, given on page 48, of complainants' Volume of Exhibits; and the reed was tuned by shifting its position in the clamp so as to shorten or lengthen, as might be required, the free tongue projecting over the other pole of the magnet, and thus increase or reduce its normal rate of vibration and raise or lower its pitch.

Cross-Q. 359. When did you first adopt this method of adjusting the reed?

Ans. I do not know, but I made use of this method as early as November, 1873, in the instrument shown as Fig. 3 on page III of Complainants' Record.

Cross-Q. 360. You had a patent granted on some of your improvements in multiple telegraphy in April, 1875, did you not?

Ans. I believe so.

Cross-Q. 361. In your letter of May 4, 1875, (see page 129 of Complainants' Record) and in your testimony on pages 130, 131, and 132,

you refer to an experiment which you proposed to make with the piano of Don Manuel, Fenellosa and to an experiment which you made a day or two after May 4, 1875; did you make that experiment with his piano and at his room?

Ans. I did.

Cross-Q. 362. Will you describe that experiment exactly as you made it?

Ans. My recollection of the experiment is very vague. After reading my letter to Mr. Hubbard of May 4, I remember distinctly that I did make an experiment on one of the pianos belonging to the late Don Manuel Fenellosa. My recollection of the experiment, as it lies in my mind now, is substantially this: That two wires were carried from my study window into the adjoining building where Mr. Fenellosa's pianos were. In my study was placed one of my tuned interrupters and a battery, and the two wires were attached one to each end of one of the strings of a piano; I presume that string that corresponded in pitch with the interrupter employed. I can only state my general recollection of the details of the arrangement. My expectation was, that if we could pass the intermittent current through the proper string, it would be thrown into audible vibration. I have a general impression that we found all the strings metallically connected together, but that I thought the experiment was worthy of trial, as it might be possible that the string that corresponds in pitch to the reed of the interrupter employed might be thrown sympathetically into vibration.

Another experiment which I intended to try and may, perhaps, have tried, although I cannot recall the details now, was to have connected together in the same metallic circuit one of the strings of the piano and one of my tuned receivers (a battery to be included in the circuit.) I hoped that if the reed of the receiver had normally the same rate of vibration as the string of the piano, the reed might be thrown into sensible vibration when the proper key of the piano was struck. Now that I come to think of the experiment, I have a dim recollection of watching a tuned receiver of some kind in my study, so that I am more inclined to think that this experiment was also tried. At all events, whatever the exact details were, I remember distinctly that *some* experiments in pursuance of the letter to Mr. Hubbard of May 4, were made with Mr. Fenellosa's pianos. In regard to the results I am not so clear. My general impression is that we either obtained no results or indifferent results, but I cannot assert this positively. My impression also

further is, that whatever results were obtained, we thought the construction of the piano not suitable for the experiments; and I think the difficulty was that the strings were metallically connected together. I cannot pretend to be precise, and have done my best to give you my recollection of the experiment just in the vague manner it lies in my mind at present.

Cross-Q. 363. Were those experiments made or intended to be made in the development of your multiple telegraph system, and with relation thereto?

Ans. They were made in pursuance of the object stated in my letter to Mr. Hubbard of May 4, 1875; namely: That if the experiments were successful, "one consequence would be that the *timbre* of a sound could be transmitted." This referred to the speaking telephone; but I do not mean to say that I had not in view also a possible application to the multiple telegraph. The chief importance of the experiment was in reference to the speaking-telephone.

Cross-Q. 364. In your said letter of May 4, 1875, the last two paragraphs, if I understand the latter, refer to two different experiments. Of said paragraphs the first, commencing "An experiment," referred to the multiple telegraph; and the second commencing "Another experiment" referred both to the multiple telegraph and to the speaking-telephone, if I interpret your last answer correctly. Is that your meaning?

Ans. Not exactly; the paragraph commencing "An experiment" described simply an idea that I was desirous of testing, without reference to any application; although, of course, I had in my mind the bearings of the experiment in reference to all my inventions, although I did not so state in my letter.

The second paragraph commencing "Another experiment" referred not only to an experiment that I was desirous of making, but to its application to the speaking-telephone. This application was the prominent one in my mind, and was consequently the only one alluded to in my letter to Mr. Hubbard. But it must not be supposed that I did not bear in mind the possible application to the multiple telegraph because I spoke exclusively of the application to the speaking telephone.

Cross-Q. 365. When you contemplated making those experiments, as stated in your letter of May 4, 1875, you expected that if successful the first experiment referred to in the letter would result in the production of a musical sound from the piano string corresponding in pitch to the rate of vibration of the interrupter; and that the second experiment referred

to in the letter would result in the production of a musical tone from the receiving reed corresponding in pitch to the pitch of the piano string, did you not?

Ans. Yes.

Cross-Q. 366. In your testimony on pp. 131 and 132 you state that you had, at that same time, the idea of stretching a wire parallel to the surface of a stretched membrane, and attaching the center of the membrane to the wire. Did you ever make or test such an apparatus as that prior to the issue of your patent of January 30, 1877; if so, when and where, and with what results?

Ans. I did not.

Cross-Q. 367. When did you first apply or use a stretched membrane in connection with any instrument for either multiple telegraph or speaking telephone purposes?

Ans. I first applied it theoretically in the summer of '74 and used it in June, '75.

Cross-Q. 368. By applying it theoretically in the summer of '74, you mean merely that you conceived the idea in the summer of '74, do you not?

Ans. I did not *merely* conceive the idea, for at that time I was making numerous experiments with loaded membranes, and specially with the drum membrane of a human ear, with the bones attached, that demonstrated to my mind the feasibility of the conception.

By "applying it theoretically" I mean that I did not actually construct an *electrical apparatus* operated by a stretched membrane at that time.

Cross-Q. 369. And never did construct or cause to be constructed an electrical apparatus operated by or combined with a stretched membrane until after June second, 1875, did you?

Ans. I cannot be sure. I do not think that I constructed any electrical apparatus designed to be operated as a speaking telephone previously to that date, but I cannot answer the more general question put.

Cross-Q. 370. Have you any recollection or impression of having constructed or caused to be constructed, or tested or caused to be tested, prior to June 2, 1875, any multiple telegraph instrument operated by a stretched membrane or combined with a stretched membrane? If yea, describe the instrument and the manner of its operation by or combination with the membrane.

Ans. I have no distinct recollection upon the subject but I could not

assert positively that no experiments were made with ordinary musical instruments in which stretched membranes were used, such as a banjo, etc. I don't think that any electrical apparatus was specially constructed previous to June 2, 1875, in which stretched membranes were employed, either for the purposes of multiple telegraphy or for the purposes of reproducing speech by electrical means; but my recollection does not warrant me in asserting this positively.

Cross-Q. 371. When did Mr. Gardiner G. Hubbard first become interested in your speaking telephone invention and how?

Ans. Mr. Gardiner G. Hubbard was president of the Clark Institution for the Deaf and Dumb, in which I was interested. This fact led to the commencement of a friendship between us and as we became better acquainted we naturally talked upon other subjects than that of the education of the deaf. In October, 1874, I knew him sufficiently well to tell him in confidence my ideas upon the subject of the production and reproduction of sound by electrical means, and of the experiments that I had been carrying on for years past relating to the application of these ideas to multiple telegraphy. I did not at this time know that Mr. Hubbard was specially interested in telegraphic matters, otherwise I should have earlier communicated my ideas to him and sought his advice. In the latter part of October, then, or the beginning of November, 1874, Mr. Hubbard became interested in all my inventions concerning the production and reproduction of sound by electrical means, and the utilization of the vibrations produced at the receiving end in various ways. These inventions I understood included the speaking telephone.

At that time Mr. Hubbard expressed the opinion that if I wished my inventions to be of commercial value I should devote myself to the development of some one point, and not spread my energies over too large a surface. He recommended at first the general subject of multiple telegraphy, and at a later period the particular development for which I received a patent in 1875—the autograph telegraph, and rather discouraged work upon the speaking telephone. My understanding always was that the speaking-telephone was included in the inventions that belonged to Messrs. Hubbard and Sanders from the autumn of 1874, but I found at a later period that they had not had this idea, which might account for the little encouragement I received to spend time on experiments relating to it. Even as lately as 1876 when the telephone was an assured success Mr. Hubbard generously offered to relinquish to me all right and title to that invention, as he was inclined to think it was outside our original understand-

ing; but after a thorough discussion of the point between Mr. Hubbard, Mr. Sanders, and myself, it was agreed to consider it as included.

Cross-Q. 372. Who paid the expense of having the instruments and experiments made between the 2d of June and end of July, 1875, referred to in your examination-in-chief interrogatories 74–93?

Ans. Mr. Hubbard and Mr. Sanders.

Cross-Q. 373. And who paid the expense of the experiment that was tried a day or two after May 4, 1875, referred to in your answer to interrogatory 64?

Ans. There was no special expense about it. Mr. Watson lived in Salem and so did I, and if there was any work done, it was done out of working hours; and probably no charge was made for Mr. Watson's time.

Adjourned to February 27th.

FEBRUARY 27th.

Cross-Q. 374. In my cross-question 370, I asked you, in substance, whether, prior to June 2, 1875, you had ever constructed or tested any multiple telegraph instrument having a stretched membrane, to which you replied, in substance, that you had no distinct recollection upon the subject; but could not assert positively; did you, prior to June 2, 1875, contemplate the use of a membrane in connection with the vibrating reed in your multiple telegraph instruments, or any of them?

Ans. I don't think so. I had in view the possibility of using stretched membranes in multiple telegraph apparatus of some kind; but so far as my recollection goes I simply had the idea of utilizing some of the ordinary musical instruments in which stretched membranes are used. I of course contemplated the use of a membrane in connection with a vibrating reed similar to that in my multiple telegraph, but not clamped so as to give it a definite pitch, for the purposes of the speaking telephone as early as the summer of 1874.

I understood your question at first to refer to the use of this combination in the multiple telegraph. It was never intended for this use, although it might be possible to make some application of the kind.

Cross-Q. 375. In your multiple telegraph instruments prior to June 2, 1875, the reeds were steel springs—why springs?

Ans. I do not know, excepting that we had arrived at steel springs as a convenient form by numerous experiments.

Cross-Q. 376. That was a form which conveniently permitted of the vibration of the reed armature, was it not?

Ans. I suppose so.

Cross-Q. 377. The attachment of the armature to a stretched membrane also conveniently permitted the vibration of the armature; and, in that respect, the stretched membrane became the equivalent of the spring, did it not?

Ans. As I understand your question, you are considering the attachment of a membrane to a tuned reed; in this case I should presume that the movement of the reed would be fettered by the membrane. If you consider the case of an unclamped reed having no tendency to a particular rate of vibration attached to a stretched membrane, as shown in my speaking telephone instrument, then this form would conveniently permit of the vibration of the armature; but the stretched membrane, instead of responding markedly to some one sound of particular pitch, as a tuned reed should have done, would vibrate well to sounds of all pitches within the limits of the speaking voice, and would also copy those details of vibration that give rise to what we call quality of sound. The stretched membrane, therefore, could not be considered as simply the equivalent of the spring.

(In consequence of the witness' not feeling well the examination is suspended until 2.30, P. M. At 2.30, P. M., adjourned to February 28.)

FEBRUARY 28, 1883.

Cross-Q. 378. I did not inquire whether the stretched membrane would be simply the equivalent of the spring for the purposes referred to, but whether the stretched membrane as a support for the armature would not, like the spring, be an elastic support; and would not, like the spring, allow the armature to vibrate freely in front of the poles, and in response to the electric currents on the line, and, *to that extent*, be equivalent to the spring as a support for the armature.

Ans. As I understand the question, you inquire whether, for the purposes of multiple telegraphy, a stretched membrane could not conveniently be substituted for a tuned reed, and the point of the question is, whether the stretched membrane being an elastic support would not allow the armature to vibrate freely in front of the poles and in response to the electric currents.

Now, the trouble with the stretched membrane, for the purposes of multiple telegraphy, is that it would vibrate *too freely* in response to the electric currents. It will copy all sorts of vibrations and at all rates of fre-

quency a great deal too well for the purposes of multiple telegraphy. For such purposes we want an arrangement that will vibrate very freely at one particular rate, and very poorly, if at all, at other rates. In this respect a stretched membrane is not the equivalent of a tuned reed.

I have been obliged to make a long answer in order that my understanding of the question may be comprehended.

Cross-Q. 379. The stretched membrane would be an elastic support to the armature, would it not?

Ans. Yes.

Cross-Q. 380. And would allow the armature to vibrate in response to the electric currents on the line, would it not?

Ans. Yes.

Cross-Q. 381. If you should use one of your tuned transmitting reeds, such as is shown in Fig. 5 of your patent of March 7, 1876, in connection with a stretched membrane receiver such as is shown in Fig. 7, of the same patent, and should cause the transmitting reed to vibrate at any given rate per second, so as to give out a note of a certain definite pitch; would not the membrane receiver vibrate at the same rate and give out a note of the same pitch in response?

Ans. It would; but, of course, the vibration would not be so intense as it would be were the receiving instrument specially tuned to that pitch, as in the case of the tuned reed receiver shown in Figs. 5 and 6 of the patent.

Cross-Q. 382. And *vice versa*, if you should vibrate the stretched membrane at a certain given rate per second, corresponding to a note of a certain pitch, would not the tuned reed of the other instrument, if tuned to the same pitch, give out the same note in response to the currents set in motion through the line by the vibration of the membrane and its armature?

Ans. As I understand the question, the membrane and attached armature are supposed by the question to be set in vibration in the manner specified in the patent, that is "by the human voice or by means of a musical instrument." In the case mentioned above, then, a musical sound of definite pitch is supposed to be produced in the neighborhood of the membrane, the vibration of the air causes the vibration of the membrane and attached armature, electrical undulations traverse the circuit to the coils of a tuned receiver like those shown in Figs. 5 and 6 of the patent.

The question as I understand it, is, Will the tuned reed, if normally tuned to that pitch, respond? It will, but not to the same extent as

when a tuned transmitter, (like those shown in Figs. 5 and 6,) worked by wind or other mechanical means, as stated in the patent, is employed.

As I understand the gist of your two questions, cross-question 381 and cross-question 382, you desire to know whether the membrane telephones, shown in Fig. 7 of my patent of March 7, 1876, are the equivalents of the tuned reed instruments shown in Figs. 5 and 6, for the purposes of multiple telegraphy.

They are not. It is true that a membrane telephone can be used for the purpose of transmitting a musical tone in the manner described above; it is true that it can be used for the purpose of receiving a musical tone, but the effects produced, whether the instrument is used as a transmitter or receiver, in transmitting and receiving musical tones, are so much inferior to the effects produced with tuned instruments, like those shown in Figs. 5 and 6, that practically, for the purposes of multiple telegraphy, the membrane telephones are by no means the equivalents of the tuned reeds.

Cross-Q. 383. Did you, in the spring of 1875, know of the Reis telephone, in which a stretched membrane transmitter is used to transmit musical tones or tones of a certain definite pitch?

Ans. Yes.

Cross-Q. 384. Did you, in the spring of 1875, contemplate the application of a stretched membrane in connection with your circuit-interrupters, which interrupted the circuit at certain definite times or rates per second, and which were a part of your multiple telegraph system at that time?

Ans. I had such application in contemplation much earlier; I believe the summer or autumn of 1874.

Cross-Q. 385. You mentioned it in your multiple telegraph patent of April 6, 1875, did you not?

Ans. I can find no reference to it in that patent. The paragraph at the bottom of the first column of the first page of a Patent Office printed copy of my said patent, in which membranes are alluded to, had reference to an entirely different invention.

Cross-Q. 386. I now put that copy in evidence as Exhibit Bell Patent of April 6, 1875, and ask you to describe the manner in which you contemplated using the membrane as referred to therein.

Ans. The membrane was intended to open and close a local circuit containing a Morse sounder, or "any ordinary or suitable electro-magnetic recording or sounding instrument," for the purpose of making

Morse or other signals. It had no reference to the production of musical tones.

I thought that a membrane, if loose and flabby enough, could be used in place of the slow-moving lever, described in my patent as a "vibratory circuit-breaker," to open or close a local circuit each time a tuned reed of one of my multiple telegraph receiving instruments was thrown into forcible vibration.

Cross-Q. 387. In one of your foregoing answers you have spoken of experiments which you made with a weighted membrane in 1874; you referred to your experiments with the phonautograph, did you not?

Ans. Yes, to that; and also or rather chiefly to phonautographical experiments made with a human ear taken from a dead subject.

Cross-Q. 388. You have testified in substance this morning that the apparatus shown in Fig. 7 of your patent of March 7, 1876, is not well adapted to the purposes of multiple telegraphy; did you not, in 1875 and 1876, contemplate the employment of it for the purposes of multiple telegraphy?

Ans. I meant to convey the idea in my previous answers, that while it might be possible to use the apparatus shown in Fig. 7 for the purposes of multiple telegraphy, it was not nearly so well adapted for this purpose as the tuned instruments shown in Figs. 5 and 6.

In regard to the last part of the question: While I recognized in 1875 and 1876, the possibility of using the apparatus for the purposes inquired about, I did not contemplate its employment in multiple telegraphy.

Cross-Q. 389. Did you not in 1875 and 1876, contemplate the employment of the apparatus shown in Figs. 5 and 6 of your said patent of March 7, 1876, for the purpose of transmitting and reproducing noises and sounds of any kind?

Ans. No.

Cross-Q. 390. In the specifications of said patent, in the description of Figs. 5 and 6, and before you came to any reference to Fig. 7, you used the following language:

"Hence, by these instruments, two or more telegraphic signals or messages may be sent simultaneously over the same circuit without interfering with one another.

"I desire here to remark that there are many other uses to which these instruments may be put, such as the simultaneous transmission of musical notes, differing in loudness as well as in pitch and the telegraphic transmission of noises or sounds of any kind."

How do you reconcile this statement of the specification with your last answer?

Ans. The specification itself contains the explanation; immediately following the last paragraph quoted, follows the explanation in detail of what I meant. The first following paragraph describes or shows how "the simultaneous transmission of musical notes, differing in loudness as well as in pitch" can be accomplished with the instruments arranged just as they are shown in Figs. 5 and 6; and the succeeding paragraphs describe the modification of the apparatus that would admit of the telegraphic transmission of noises or sounds of any kind. In reference to this point I quote from the patent the paragraphs referred to. They are as follows:

"One of the ways in which the armature *c*, Fig. 5, may be set in vibration, has been stated above to be by wind. Another mode is shown in Fig. 7, whereby motion can be imparted to the armature by the human voice or by means of a musical instrument.

"The armature *c*, Fig. 7, is fastened loosely by one extremity to the uncovered leg *d* of the electro-magnet *b*, and its other extremity is attached to the center of a stretched membrane *a*. A cone A, is used to converge sound vibrations upon the membrane. When a sound is uttered in the cone the membrane *a* is set in vibration, the armature *c* is forced to partake of the motion, and thus electrical undulations are created upon the circuit E, *b*, *e*, *f*, *g*. These undulations are similar in form to the air vibrations caused by the sound, that is, they are represented graphically by similar curves. The undulatory current passing through the electro-magnet *f*, influences its armature *h* to copy the motion of the armature *c*. A similar sound to that uttered into A is then heard to proceed from L."

Cross-Q. 391. In the passage which I quoted in my last question above, there twice occurs the expression, "these instruments;" up to that point you had described no instruments, except those shown in Figs. 5 and 6, and it was in the body of the description of the instruments shown in Figs. 5 and 6, that the quoted paragraph occurs; did not the expression, "these instruments," as there contained, refer to the instruments shown in Figs. 5 and 6?

Ans. Yes.

Cross-Q. 392. In your said specification, and in one of the paragraphs quoted by you in answer to cross-question 390, I read the following:

"One of the ways in which the armature *c*, Fig. 5, may be set in vibration, has been stated above to be by wind. Another mode is shown in Fig. 7, whereby motion can be imparted to the armature by the human voice or by means of a musical instrument."

I understand the meaning of the last clause of that paragraph to be

"Another mode," "in which the armature *c*, Fig. 5, may be set in vibration," am I correct?

[*Objected to for the reason that the patent speaks for itself.*]

Ans. Figs. 5 and 6 do not pretend to show the full construction of the apparatus they illustrate, but are simply electrical diagrams. What I meant was that an instrument operating substantially like that in Fig. 5, could be converted into a membrane telephone, like that shown in Fig. 7, by the modifications and additions described in the specification, and quoted in my answer to Cross-question 390.

Cross-Q. 393. You wrote that specification yourself, did you not?

Ans. I did.

Cross-Q. 394. As you are very skilful in the use of language why did you not state in your specification that an instrument operating substantially like that in Fig. 5, could be "converted into" a membrane telephone like that shown in Fig. 7, by the modifications and additions described in the specification, and quoted in your answer to Cross-question 390, instead of describing Fig. 7, only as another mode in which the armature *c*, Fig. 5, may be set in vibration?

Ans. I think I did state so in substance. I wrote and rewrote the specification a number of times and finally adopted that mode of expression that seemed to me best to explain my invention, and the relation that one part of it bore to another.

Cross-Q. 395. Is Fig. 7 of that patent, like Figs. 5 and 6, only an electrical diagram?

Ans. Certainly.

Cross-Q. 396. So far as the reed instruments shown in Figs. 5 and 6 operated to transmit and reproduce sound, did they not also operate to reproduce the *timbre* of the sound?

Ans. The tuned reed instruments were not adapted to reproduce timbre. The reeds when once set in motion had a tendency to vibrate after a law of their own, quite independently of the electric current, so that when used as receivers they selected and re-inforced certain vibrations and not others.

Cross-Q. 397. Did they not in fact reproduce the *timbre* of the sound?—I mean when a tuned reed transmitter and a tuned reed receiver were used as in Figs. 5 and 6?

Ans. If the transmitting and receiving reeds were precisely alike in every respect, it might be possible that the character of the motion pro-

duced in the one would be substantially similar to that produced in the other, in which case the *timbre* of the musical note produced would be the same in both cases.

I would like to understand clearly what your question means.

Cross-Q. 398. You have just testified in substance that the tuned reed transmitters and receivers, arranged as shown in Figs. 5 and 6 of your patent of March 7, 1876, were not adapted to reproducing the *timbre* of the sound transmitted; did you never, as a matter of fact, actually *hear* them reproduce the *timbre* of the sound transmitted?

Ans. Not as arranged in Figs. 5 and 6. As I have stated above the reeds have a tendency to a normal rate of vibration. If, then, a tuned reed is solicited by the varying attraction of an electro-magnet to copy some other kind of vibration than that to which it is specially adapted, the actual vibration of the reed is, I think, the resultant of its own normal vibration, with the vibrations impressed upon it, and the resulting quality of sound is different from the sound produced by the transmitting instrument employed.

If now we damp the receiving reed, as by pressing the ear closely against it, we prevent or diminish the effect of its free vibration, so as to leave the forced vibrations of the reed comparatively uninfluenced. In this case the quality or *timbre* of the resulting sound closely approximates to that of the sound produced by the transmitting instrument employed. As a matter of fact I have heard the *timbre* of a sound reproduced very closely in this way, but not when the instruments are arranged with the reeds free, as in Figs. 5 and 6.

Cross-Q. 399. When did you first hear the *timbre* of a sound reproduced by the tuned reed receiver?

Ans. I think it was on the 2d of June, 1875; at all events on that day I pressed the tuned reed of a receiver closely against my ear while Mr. Watson plucked the reed of another instrument in the same circuit. The two reeds were normally tuned to different pitches. I not only heard from the instrument at my ear a musical tone, similar in pitch to that produced by the reed plucked by Mr. Watson, but also fancied I could distinguish a reproduction of the peculiar character or quality of sound produced by the pluck.

(Adjourned to March 1.)

MARCH 1, 1883.

Cross-Q. 400. In your English provisional specification printed in complainants' exhibits, pp. 46-63, and which was filed in England, December 9, 1876, I find seven inventions or plans described. The description of the FOURTH PLAN contains the following matter, commencing near the bottom of p. 58, and ending below the middle of p. 60, and which I quote as follows:

"FOURTH PLAN.

"In the plans so far described a separate instrument is employed for every pitch, and the electrical vibrations for different pitches are combined upon the wire, each armature being capable of transmitting or receiving but a single note, and thus as many separate instruments are required as there are messages or musical notes to transmit.

"In this fourth part of the invention a single instrument is employed, the armature of which can be set in vibration by a musical instrument, or by the tones of a human voice, or by any sound whatever.

"This fourth plan is represented in Figures 21, 22, and 23, wherein is shown a single telephone at each station in place of the transmitting and receiving instruments heretofore described, the telephones being illustrated separately in Figures 19 and 20.

"One of the ways in which the armature A, Figure 15, may be set in vibration has been stated to be by wind. Another mode is shown in Figure 19, whereby motion can be imparted to the armature by the human voice, or by means of musical instrument, or by sound of any kind.

"The armature A, Figure 19, is fastened loosely by one extremity to the uncovered leg *h* of the electro-magnet E, and its other extremity is attached to the center of a stretched membrane *n*. A cone C^2 is used to converge sound vibrations upon the membrane. When a musical note is made in the neighborhood of the membrane *n* it is set in vibration, the armature A is forced to partake of the motion, and thus electrical undulations are created upon the circuit G, B, E, W, E^1, G^1.

The armature A^1 is thus thrown into synchronous vibration with the armature A, emitting a musical note of similar pitch to that which originated the vibration of armature A. If two or more musical notes be simultaneously sounded in the neighborhood of the cone C^2, the resultant motion of the air is copied by the membrane *n*, to which the armature A is attached, and this armature A, acting inductively upon the current traversing the coils of the electro-magnet E, occasions an increase and diminution in its utensity, and the armature A^1 is thrown into vibration by the varying attraction of the electro-magnet E^1, to which it is attached, and thus imparts to the air at n^1 a *fac-simile* copy of the motion of the air that acted upon the membrane *n*; hence two or more musical notes or telegraphic messages can be sent simultaneously along a single circuit, from one station to another, by means of one instrument at each station.

"Instead of the cone, membrane and armature shown in Figure 19, a plate of thin steel may be used; the vibration of the plate in front of the magnet occasioned by the motion of the air during the production of sound changes the intensity of the current as hereinbefore described and occasions a similar motion in a similar steel plate in front of another electro-magnet at another station in the circuit. Such a plate is shown in Figure 20, and marked A^3, it being attached to a frame F. The telephones shewn in Figures 21 to 26 are of the kind shewn in Figure 20. This invention is not limited, however, to the use of a steel plate, but includes within its scope any materials capable of inductive action upon a current of electricity. In this plan an operator at station, Figure 21, may send a telegraphic message on a certain pitch, while another operator at another station, say Figure 22, is transmitting another message on a different pitch, and both sounds will be audible at all the stations in the circuit.

"The receiving operators will pay attention to signals of only one pitch, hence by this plan the simultaneous transmission of a number of telegraphic messages over a single circuit in the same or both directions with a single main battery for the whole circuit and a single telephonic instrument at each station is rendered possible."

That description which I have quoted in my question is in part a description of the application to the purposes of multiple telegraphy of the inventions which are shown in Figs. 5, 6 and 7 of your patent of March 7, 1876; is it not?

(*The quotation is objected to for the reason that it stops in the middle of a paragraph.*

Respondents' counsel replies that the question relates solely to the application of the alleged inventions to multiple telegraphy, and therefore the quotation stops where the description of their application to multiple telegraphy stops.)

Ans. It is in part, but in part only, a description of the application to the purposes of multiple telegraphy of the apparatus shown in Fig. 7 of my March 7, '76, patent, and modifications of it, but is specially kept distinct from instruments like those shown in Figs. 5 and 6 of that patent.

In order that the full scope of the Fourth Plan of the English provisional specification may be fully understood, I shall continue the quotation from where you left off, to the end of the plan:

"Whatever sound is made in the neighborhood of any telephone, say T, *e*, Figure 21, is echoed in *fac-simile* by the telephones T, *e*, of all the other stations, hence this fourth plan is also adapted for the entire new use of transmitting intelligibly the exact sounds of articulate speech.

"To convey an articulate message it is only necessary for the operator to speak in the neighborhood of a telephone, say T, *e*, Figure 21, and for the receiving operator at another instrument, say T, *e*, Figure 23, to listen.

"If two persons speak simultaneously in the neighborhood of the same or different telephones, the utterances of the two speakers are reproduced simultaneously by all the other telephones on the same circuit, hence, by this plan vocal messages may be transmitted simultaneously over the same circuit in the same or opposite directions, with one battery for the whole circuit, and one telephone at each station on the line.

"In this plan of transmitting vocal utterances it is only necessary that the strength of the current should vary in intensity as the air varies in density during the utterance of the sound.

"All the methods of producing undulating currents of electricity hereinbefore described may be employed in producing the undulations by which to transmit articulate messages. For instance, the vibrations of a membrane may cause a platinum wire to vibrate in water or other liquid of high resistance included in the circuit, and hence will occasion changes in the intensity of the current traversing the circuit proportional to the changes in the density of the air which originally gave rise to the vibrations of the membranes, and hence the sounds uttered in the neighborhood of that membrane will be reproduced from a telephone on a distant part of the circuit."

Cross-Q. 401. The quotation which you have made in your answer relates to the telephone and its use for transmitting and reproducing articulate speech, does it not?

Ans. It relates to the use for transmitting articulate speech of the telephones described in *your* quotation.

Cross-Q. 402. When did you first learn that Elisha Gray was before the U. S. Patent Office with a caveat or application for an electric speaking telephone?

Ans. I do not know; my impression is that I learned this from the following letters, dated respectively February 21 and March 5, 1877, received from Mr. Elisha Gray,

[*Respondents' counsel requests that with the letters here offered by the witness, the telegram of the witness to Mr. Gray, dated February* 24, 1877, *the letter of Gray to Bell, dated February* 24, 1877, *and the letter of Bell to Gray, dated March* 2, 1877, *completing the correspondence referred to by the witness, be also put in evidence: and that the whole be marked Exhibit Bell-Gray correspondence, which is done accordingly, the same being copied by consent from Elisha Gray's deposition in the Dowd case.*

Complainants' counsel, also puts in evidence, as connected with that correspondence, the article from the Chicago Tribune, referred to in Mr. Bell's telegram, and it is copied from the same deposition of Mr. Gray in the Dowd case. (*p.* 149.)]

EXHIBIT BELL-GRAY CORRESPONDENCE.—C. H. S., *Ex'r.*

GRAY TO BELL.

1. "CHICAGO, *February* 21, 1877.

"Professor A. G. BELL:

"MY DEAR SIR: I gave a lecture in McCormick Hall, this city, Tuesday evening, 27th inst., on the *Telephone*, as *I* have developed it. I also connect with Milwaukee, and have tunes and telegraphing done from there. I should like to explain and exhibit your method of transmitting vocal sounds as well, but do not feel at liberty to do *more* without permission from you. I should explain it as *your* method, and not mine, although the *office* records show a description of the talking-telegraph filed by me the *same day* yours was filed. The description is substantially the same as yours. I was unfortunate in being an hour or two behind you. There is no evidence that either knew that the other was working in this direction.

"With our facilities I can get up an apparatus on a day's notice that will answer. I have a copy of your last patent. Please telegraph at my expense, on receipt of this, yes or no, and I will act accordingly.

"Yours truly,

"ELISHA GRAY,
"220 *Kinsey Street, Chicago.*

"I send this care Mr. Hayes, as I do not know your address. I received a line from you through Mr. Baldwin, for which please accept thanks."

BELL TO GRAY—TELEGRAM.

2. "BOSTON, *February* 24, 1877.

"ELISHA GRAY, *Western Electric Mfg. Co.:*

"If you refute in your lecture, and in the *Chicago Tribune*, the libel upon me published in that paper February sixteenth, I shall have no objection. Please answer.

"A. GRAHAM BELL."

3. (*From the Chicago Tribune, February* 16, 1877.)

"Many of the eastern papers are favoring their readers with sketches of Prof. A. M. Bell, 'the inventor of the telephone.' Meanwhile the real inventor of the telephone, Mr. Elisha Gray, of Chicago, minds his own business, and apparently concerns himself not at all about the spurious claims of Prof. Bell. Persons acquainted with the subject need not be informed that Mr. Gray's claims are incontrovertible. Science long since recognized them. They were established in the columns of the *Tribune* years ago, before Prof. Bell was so much as heard of. They are officially approved in the Patent Office at Washington, and they have already brought in large returns in money as well as in reputation to the inventor. Talking by telegraph and other sports of that description Mr. Gray has not paid much attention to as yet, because there

is no present indication in it of anything more than sport; but the principles involved in it were discussed by him, and have all been used by him in a practical manner."

GRAY TO BELL.

4. "CHICAGO, *February* 24, 1877.

"PROF. A. G. BELL:

"*Sir:* Your telegram received. In answer, I would say, first, that I do not know what article you refer to, but will see the paper of that date. I have seen one or two articles lately that venture to assume that you are not the only man in the world who had contributed to the development of the telephone. If such assertions are "*libels*," then you have been *libelled*. So far as I know, the "libels" are mostly on the other side, if assertions of originality, etc., may be so considered. . The papers here have been full of articles of late, copied from Boston papers, claiming the whole development of the telephone for you. It would not be strange if some one, knowing the facts, should speak, and in doing so may have done you injustice.

"You seem to assume that I am responsible for all the newspaper articles that are not in your favor. I assert here that I have never said a word about you in the public prints, and I have always—even to the degree of offending some of my friends—defended you when I have heard disparaging remarks made about you. And since I made your acquaintance, I have taken the ground that we were both independent inventors. Now, if we are going into the refutation business I suggest that it be mutual. So far as I know, there is quite as much needed from your side as from mine. I am always willing to correct any wrong done you, even although I am not responsible. If we undertake to follow up the newspapers we will have our hands full. I shall not show your apparatus, as I do not want any conditions imposed until I know what I am expected to refute. I do not know but that it is to deny all claim to the invention. Allow me to suggest that your telegram was just a little indiscreet, as it contained an assumption very unjust to me.

"I do not know your address, so I send through Mr. Hayes.

"Yours truly,

"E. GRAY.

"P. S.—You should have sent your dispatch collect, as I requested it sent."

BELL TO GRAY.

5. "BOSTON UNIVERSITY, *March* 2, 1877.

"ELISHA GRAY, Esq., Chicago:

"MY DEAR SIR: I was somewhat hasty, I must confess, in sending my telegram, for, of course, you are not responsible for all the ill-natured remarks that may appear in the newspapers concerning me.

"I am sorry that my telegram should have prevented you from making the experiments you desired, for it is my sincere desire to oblige you in any way I can. I am glad that you are willing to do me justice, and

must thank you for saying a good word for me occasionally. I may say that it has uniformly been my custom to make honorable mention of your name in multiple telegraphy, and to give you the credit of being an independent inventor.

"I have not generally alluded to your name in connection with the invention of the electric "telephone," for we seem to attach different significations to the word. I apply the term only to an apparatus for transmitting the voice, (which meaning is strictly in accordance with the derivation of the word,) whereas you seem to use the term as expressive of any apparatus for the transmission of *musical* tones by the electric current.

"I have no knowledge of any apparatus constructed by you for the purpose of transmitting vocal sounds, and I trust that I have not been doing you an injustice. It is my sincere desire to give you all the credit that I feel justly belongs to you.

"I do not know the nature of the application for a caveat, to which you have referred as having been filed two hours after my application for a patent, excepting that it had something to do with the vibration of a wire in water, and therefore conflicted with my patent. My specification had been prepared *months* before it was filed, and a copy had been taken to England by a friend. I delayed the filing of the American patent until I could hear from him. At last the protests of all those interested in my invention deprecating further delay had their effects, and I filed my application without waiting for a conclusion of negotiations in England. It was certainly a most striking coincidence that our applications should have been filed on the same day.

"I have been kept so busy during the past few days correcting the examination papers of my normal school, that I have been unable to write.

"In haste,

"Yours truly,

"ALEXANDER GRAHAM BELL."

GRAY TO BELL.

6. "CHICAGO, *March* 5, 1877.

"Prof. BELL,

"My Dear Sir: I have just received yours of the second instant, and I freely forgive you for any feeling your telegram had aroused. I found the article I suppose you refer to, in the personal column of the "Tribune," and am free to say it does you injustice.

"I gave you full credit for the talking feature of the telephone, as you may have seen in the Associated Press dispatch that was sent to all the papers in the country, in my lecture in McCormick Hall, Feb. 27. There were four different papers represented at the lecture, but only one—the *Tribune*—alluded to my mention of you, except the "Press" dispatch. I described your apparatus at length, by diagram.

"Of course you have had no means of knowing what I had done in the matter of transmitting vocal sounds. When, however, you see the

specification, you will see that the fundamental principles are contained therein. I do not, however, claim even the credit of inventing it, as I do not believe a mere description of an idea that has never *been reduced* to *practice*—in the *strict sense* of that phrase—should be dignified with the name invention.

"Yours very truly,

"ELISHA GRAY."

Cross-Q. 403. When did you first know that you had *any* competitor in the United States Patent-Office for the invention of the speaking telephone?

Ans. I think in March, '78, when the telephone interferences were declared. I have already referred to the letters of Mr. Elisha Gray, of February 25 and March 5, 1877, in this connection.

Cross-Q. 404. By reference to pp. 14, 15 and 16, of complainants' printed exhibits, I find that on the 19th of February, 1876, five days after your application for the patents of March 7, 1876, was filed, the following notice was sent by the Patent Office:

"Copy sent
Feb. 19.
S. R. A.

Examiner's room No. 118,
U. S. Patent Office,
Washington, D. C., Feby. 19, 1876.

A. G. Bell,
care Pollok & Bailey, present,
Telegraphy: Feb. 14, 1876.

In this case it is found that the 1st, 4th and 5th clauses of claim relate to matters described in a pending caveat. The caveator has been notified to complete and this appn is suspended for ninety days as required by law.

Z. F. WILBOR, *Exr.*"

Immediately under it I also find a printed copy of a letter from Pollok & Bailey to the Patent Office, acknowledging the receipt of the above letter; after which follow copies of certain proceedings in the Patent Office ending with the withdrawal of the suspension of said application, in accordance with an opinion of the Commissioner of Patents.

Did not those proceedings relate to your application for the patent of March 7, 1876, and did you not have notice of said letter, signed by Examiner Wilbor and dated February 19, 1876, at the time or immediately thereafter?

[*Complainants' counsel inquires whether the notice concerning said caveat, and the decision of the Commissioner that it should be withdrawn, are introduced for the purpose of maintaining the allegation in defendants' answer that the Commissioner overlooked said caveat and did not notice it; and if*

not, he objects that there is no allegation in the answer which renders the inquiry material or competent.

Respondents' counsel replies that, not having put the letter in evidence himself, he is not prepared to state for what purpose it was put in, and he merely wishes to know whether Mr. Bell knew of the letter at the time or thereabouts.

Complainants' counsel replies that Mr. Bell has already testified on that subject.]

Ans. These proceedings did relate to my application for the patent of March 7, 1876. My recollection is that the proceedings in relation to the interference were managed entirely by my counsel, Messrs. Pollok & Bailey, without consultation with me, and that I merely knew that some interference had been declared and had been dissolved, without my knowing anything about the details of the proceedings.

Cross-Q. 405. When did you first become personally acquainted with Mr. Elisha Gray?

Ans. To the best of my recollection the first time we met was on Saturday or Sunday the 24th or 25th of June, 1876, at the Centennial Exhibition, in Philadelphia.

Cross-Q 406. How often did you meet him during that summer and fall?

Ans. I have no recollection of having met him that summer or fall, excepting on one or both of the days specified above.

Cross-Q. 407. In your English provisional specification filed Dec. 9, 1876, and which among other things describes the electric transmission and reproduction of articulate speech, you styled your invention "Improvements in Electric Telephony (Transmitting or Causing Sounds for Telegraphing Messages) and Telephonic Apparatus," did you not?

(*Objected to for the reason that it does not appear whether the title was given by the English Patent Office or by Mr. Bell; and for the further reason that the specification states expressly in the preliminary portion the nature of the invention, and the purposes to which it is to be applied.*)

Ans. It is so styled, but not by me.

Cross-Q. 408. By your patent agents, Brandon and Morgan Brown, or either of them?

Ans. I do not know. My impression is that when the specification left America, its title was simply "Improvements in Electric Telephony and Telephonic apparatus." I have further recollection of some conversation with Mr. William Morgan-Brown, or some one else connected with the taking out of the specification, during the course of which it was

stated that the English Patent Office declined to accept the title without some definition of the new words employed. In consequence of this the words "Transmitting or Causing Sounds for Telegraphing Messages" had been interpolated. I presume this was done by Mr. William Morgan-Brown, or by the English Patent Office by his consent. I do not know anything definitely about the matter myself personally further than I have stated.

Cross-Q. 409. In your United States Patent of January 30,1877, the application for which was filed January 15, '77, and which clearly describes the electrical transmission and reproduction of articulate speech, you styled your invention "Improvements in Electric Telephony," did you not?

Ans. I presume so; at least I observe that whereas the title of the patent is stated in the heading to be "Improvement in Electric Telegraphy," it is styled in the first clause of the specification "Improvements in Electric Telephony."

Cross-Q. 410. The title in the heading was given by the Patent Office, and the title in the specification was given by you, were they not?

Ans. I presume so.

Cross-Q. 411. In your patent of March 7, 1876, you styled your invention "Improvements in Telegraphy," did you not?

Ans. I did.

Cross-Q. 412. In your United States patent of January 30, 1877, you described a speaking telephone, and then, in that part of the specification which is printed on p. 11 of complainants' record, commencing with the words "The operation and use of this instrument are as follows," and continuing through the next two paragraphs thereafter, you described how that instrument can be used for multiple telegraph purposes, and with an alphabet similar to the Morse alphabet, did you not?

Ans. I described in my United States patent of January 30, 1877, an improved form of the speaking telephone shown in my patent of March 7, 1876. In the passage referred to I showed that the instrument could be used for the purposes of multiple telegraphy, as stated in the question. This, of course, is only one of the uses specified in the patent, the main use being the reproduction of articulate speech.

Cross-Q. 413. In your answer to cross-question 388, referring to the instrument shown in Fig. 7 of your patent of March 7, 1876, you state that you did not in 1875 and 1876, contemplate the employment of that

apparatus in multiple telegraphy; will you then inform me why you inserted in your English provisional specification filed December 9, 1876, a specific description of the application of that apparatus in multiple telegraphy, and why you inserted in your United States patent of January 30, 1877, a specific description of the use in multiple telegraphy of your telephone instruments, with directions how to employ them in transmitting by the Morse alphabet?

Ans. In my answer to cross-question 388 referred to, I stated that although I did not contemplate the employment of the apparatus shown in Fig. 7 of my March 7, '76, patent for the purposes of multiple telegraphy, as it was not so well adapted for this purpose as the tuned instruments shown in Figs. 5 and 6, still "I recognized in 1875 and '76 the possibility of using the apparatus for the purpose inquired about." The specification of my March 7, '76 patent was prepared by myself alone, whereas my English provisional specification and my United States patent of January 30, 1877, were prepared with the assistance of counsel skilled in patent law, and my impression is that it was considered advisable to state in the specifications all the uses to which the instruments could possibly be put. Quite independently of this, the sounds produced with the improved telephones shown in the United States patent of January 30, 1877, and also described in the English provisional specification, were so much superior in loudness to those produced by the membrane telephones, shown in my May 7, '76, patent, that really there would be little difficulty in persons with skilled ears using the telephones for the purposes of multiple telegraphy in the manner described in the specifications referred to.

Cross-Q. 414. Did the same counsel who assisted you in preparing the English provisional specification assist you in preparing the specification of the United States patent of January 30, 1877?

Ans. I think not, excepting so far as the rough draft of the English specification might have been consulted in preparing the application to the United States Patent Office.

Cross-Q. 415. What counsel assisted you in preparing the specification for the United States patent of January 30, 1877?

Ans. Messrs. Pollok & Bailey, of Washington.

Cross-Q. 416. The specification of your United States patent of January 30, 1877, commences with what appears to be a description of the state of the art so far as shown in your own prior patents and applications in this country. It alludes first to what was shown in your patent

of April 6, 1875, and in a pending application. It then alludes to another pending application, after which it goes on to state what was shown and described in your patent of March 7, 1876, and how the apparatus operated, in the following language, to wit:

"And in letters patent granted to me March 7, 1876, No. 174,465, I have shown and described a method of and apparatus for producing musical tones by the action of undulatory currents of electricity, whereby a number of telegraphic signals can be sent simultaneously over the same circuit, in either or in both directions, and a single battery be used for the whole circuit."

"In the applications and patents above referred to, signals are transmitted simultaneously along a single wire by the employment of transmitting instruments, each of which occasions a succession of electrical impulses differing in rate from the others, and are received without confusion by means of receiving instruments, each tuned to a pitch at which it will be put in vibration to produce its fundamental note by one only of the transmitting instruments. A separate instrument is therefore employed for every pitch, each instrument being capable of transmitting or receiving but a single note—and thus as many separate instruments are required as there are messages or musical notes to be transmitted."

The specification then goes on to state the object of the invention claimed in the patent of January 30, 1877, which object is stated to be:

"First. The transmission simultaneously of two or more musical notes or telegraphic signals along a single wire, in either or both directions, and with a single battery for the whole circuit, *without the use of as many instruments as there are musical notes or telegraphic signals to be transmitted; Second. The electrical transmission by the same means of articulate speech and sound of every kind, whether musical or not;* Third. The electrical transmission of musical tones, articulate speech, or sounds of every kind, *without the necessity of using a voltaic battery.*

The italics are my own.

Why was it that in thus apparently attempting to distinguish between the new and the old, as the patent law required, the united intelligence of yourself and your counsel at that time succeeded in representing the March 7, 1876, patent only as a patent for multiple telegraphy, and in distinguishing the new 1877 patent as being not only for multiple telegraphy, but for the transmission of *articulate speech* and for the transmission *without a voltaic battery*?

[*Complainants' counsel objects to the question for the reason that it misrepresents the references made by the second patent to the first patent, both in the language employed in the latter part of the question and in the omission to quote from the second patent the paragraphs which particularly state the difference between the two, and the improvement which the latter exhibits over the former.*

Respondents' counsel objects to the objection as being plainly a suggestion to the witness, and leaves the correctness of his question for the judgment of the court upon an inspection of said specification.

Complainants' counsel replies that the objection was neither intended nor calculated to suggest anything to the witness, but that it was needed in order to call the attention of the court to an assumption which complainants' counsel conceives to be erroneous, and which the quotation given in the question did not afford the means of detecting.]

Ans. While I cannot accept your assumption regarding the nature of the invention shown in my January 30, 1877, patent, still, as I do not profess to be a patent expert, I cannot undertake to interpret the meaning of the patent in accordance with the patent laws, and must leave this for the court to do. According to my understanding of the patent the invention is described in the passage you have failed to quote, and which immediately follows the last clause you have given.

The passage I refer to is as follows:

"In my patent, No. 174,465, dated March 7, 1876, I have shown as one form of transmitting instrument a stretched membrane, to which the armature of an electro-magnet is attached, whereby motion can be imparted to the armature by the human voice, or by means of a musical instrument, or by sounds produced in any way.

In accordance with my present invention I substitute for the membrane and armature, shown in the transmitting and receiving instruments alluded to above, a plate of iron or steel, capable of being thrown into vibration by sounds made in its neighborhood."

I then go on to describe the apparatus in detail, in order that the nature of the invention and the manner in which it might be carried into effect might be fully and thoroughly understood.

(*Suspended to take the deposition of Mr. Alexander Melville Bell, after which, adjourned.*)

MARCH 2, 1883.

Cross-Q. 417. Does the quotation which you have added in your last answer, commencing with the words "in my patent" and ending with the word "neighborhood," contain any statement that the instruments referred to are capable of use, or are to be used, for the transmission of articulate speech by electrical means; if so, will you please explain where it is, for I am unable to find it?

[*Objected to for the reason that the patent speaks for itself.*]

Ans. This passage does not so much relate to the use of the apparatus as to its construction. It points out the chief differences between

the speaking telephone shown in my patent of March 7, 1876, No. 174,465, and the improved apparatus. The mode of using the apparatus for the purpose inquired about is fully described in the specification.

To my mind the passage referred to does indicate the use of the instrument as a speaking telephone by its reference to the speaking telephone described in my March 7, 1876, patent.

Cross-Q. 418. It refers to the thing described in your March 7, 1876, patent, certainly, but where does it refer to it as a speaking telephone, or where does it state that that thing was either capable of use, or intended to be used, as a speaking telephone; please point out the words, if there are any.

[*Same objection.*]

Ans. The "thing" described in my March 7, '76, patent, and which was shown in Fig. 7 of that patent, *was a speaking telephone.* If any doubt remains in the mind that the apparatus referred to in the passage I quoted from my January 30, '77, patent, in my answer to cross-question 416, was intended also to be used for the transmission of articulate speech by electrical means, I beg to refer you to the rest of the specification where such use is fully indicated.

Cross-Q. 419. Then, if I construe your answer correctly, you are not able to point out any words in the added quotation of your answer to cross-question 416, which related to the use of the March 7, 1876, apparatus as a speaking telephone?

[*Same objection.*]

Ans. Of course the description of its use for this purpose will be found in the patent of March 7, 1876. The patent of January 30, 1877, refers back to it for information.

Cross-Q. 420. As I read the patent of January 30, 1877, it does a good deal more than that. It states in plain terms that "In letters patent granted to me March 7, 1876, No. 174,465, I have shown and described a method of and apparatus for producing *musical tones* by the action of undulatory currents of electricity, *whereby a number of telegraphic signals can be sent simultaneously over the same circuit* in either or in both directions, and *a single battery be used for the whole circuit.* In the applications and patents above referred to, signals are transmitted simultaneously along a single wire by the employment of transmitting instruments, each of which occasions a succession of electrical impulses *differing in rate from the others,* and are received without confusion by

means of receiving instruments, each *tuned to a pitch* at which it will be put in vibration to produce its fundamental note by one only of the transmitting instruments. *A separate instrument is therefore employed for every pitch*, each instrument being capable of transmitting or receiving but a single note, *and thus as many separate instruments are required as there are messages or musical notes to be transmitted.*"

This I take to be a very explicit declaration in your 1877 patent of the character and use of the method and apparatus contained in your March 7, 1876, patent, and it certainly does *not* describe it as a speaking telephone, but as a multiple telegraph. I have examined your 1877 patent carefully and can find therein no other description of the use of the March 7, 1876, invention, but I do find a statement that the January 30, 1877, invention has for *its* object in contradistinction to what is stated about the March 7, 1876, invention:

1st: *The dispensing with the use of as many instruments as there are musical notes or telegraphic signals to be transmitted;*

2d: *The transmission of articulate speech and sound of every kind, whether musical or not, and*

3d: The transmission of such sound *without a battery.*

The italics are my own.

I inquired in substance in Cross-question 416, why in your 1877 patent you distinguished the invention of March 7, 1876, from the invention of January 30, 1877, by contrasting the facts,

1st, that the former required as many separate instruments as there are messages or musical notes to be transmitted, while the latter operated without the use of as many instruments as there are musical notes or telegraphic signals to be transmitted.

2d, that the former was a method of and apparatus for producing musical tones by the action of undulatory currents of electricity whereby a number of telegraphic signals can be sent simultaneously over the same circuit, while the latter was for the electrical transmission of articulate speech and sound of every kind *whether musical or not;* and

3d, that in the former a single battery was used for the whole circuit, while in the latter the transmission took place without the necessity of using a voltaic battery.

To my quotation, which contained a clear description of the use and purposes of the March 7, 1876, invention, you answered, in substance, that I had not quoted the whole passage, and you added the matter, which you say I ought to have included in my quotation. I now ask you again, whether in the matter which you so added to my quotation,

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you can point out one word which refers to the March 7, 1876, invention as a speaking telephone, or which is inconsistent with the statement which I quoted from your 1877 patent, plainly describing it as to be used for the transmission of musical notes or signals for multiple telegraph purposes?

[*Complainants' counsel objects to the foregoing question on the ground that it is a tissue of misstatements and misrepresentations of the contents of the* 1877 *and* 1876 *patents; that it seeks to put upon the record, under the guise of a question, an attempted argument founded on such misrepresentations and misstatements, and that the only inquiry it purports to address to the witness calls for his opinion upon the construction of the two patents which are before the court.*

Respondents' counsel says that he is not aware of any misstatement or misrepresentation made in his question; and he asks the court to compare it with the specification, and see whether it is the question or the objection that misstates and misrepresents the facts.]

Ans. - I do not consider it my place to argue the matters discussed in your question, as I should necessarily be obliged to do were I to attempt to reply. Were I to do so I might speak all day, and, after all, what I would say would amount to nothing, for the patents speak for themselves, and the points involved in the question would ultimately come to the courts for decision.

Cross-Q. 421. In your patent of January 30, 1877, the first claim is as follows:

"1. The union upon and by means of an electric circuit of two or more instruments, constructed for operation, substantially as herein shown and described, so that if motion of any kind or form be produced in any way in the armature of any one of the said instruments, the armatures of all the other instruments upon the same circuit will be moved in like manner and form, and if such motion be produced in the former by sound, like sound will be produced by the motion of the latter."

The invention described in that claim was sworn to by you in your application for the patent of January 30, 1877, as a new invention. As you are the author of the claim and of the oath of invention connected with it, you are undoubtedly able to tell me what you meant by it. If, as you now state, the invention contained in your March 7, 1876, patent was a speaking telephone, will you please explain what invention you meant to cover by this first claim of your 1877 patent?

Ans. As I understand the question, the question assumes that I prepared the claims without the assistance and advice of counsel skilled

in the patent law, which is not the case. The claim refers to the body of the specification for an explanation of its meaning, and I must decline to anticipate the decision of the courts as to the precise interpretation to be placed upon it.

Cross-Q. 422. The question assumes nothing of the kind, but it assumes merely that when you made oath to that claim as a new invention, you had some idea of what you were swearing to; and it does not call upon you to construe the claim for the court, but to state what that idea was, or in other words, to state what you thought that claim meant when you swore to it as a new invention. And with this explanation I repeat the question.

Ans. My idea is, that it referred to speaking telephones constructed for operation substantially as shown in the patent of January 30, 1877, and to their arrangement upon an electric circuit, so that the character of motion of the plate armature of any one of the instruments should be copied by the plate armatures of all the other instruments on the circuit. from which it would follow, as I believe it to be stated in the claim that if the motion of the metallic diaphragm of that instrument which was used as a transmitter should be caused by the voice of a speaker, that the armatures of all the other instruments upon the circuit would reproduce the articulation of the speaker. This is my understanding of the claim, and is what, I think, is substantially shown and described in the body of the specification. Of course the technical construction of the claim is a matter for the courts to decide.

I desire to add that I did not understand that the claim was limited to cases where the instruments were to be used for the purpose of reproducing articulate speech. My understanding was, that it was intended to be broad enough to include any possible use that could be made of the telephones described in the patent of January 30, 1877, and arranged as shown, by virtue of the peculiar property of the combination, namely, that the *character* of the motion produced in any one instrument would be copied by all the others. I may be entirely wrong, but that was may understanding.

Cross-Q. 423. Please answer the same question as to the 2nd claim of your patent of January 30, 1877, which reads as follows:

"2. In a system of electric telegraphy or telephony consisting of transmitting and receiving instruments united upon an electric circuit, the production in the armature of each receiving instrument of any given motion, by subjecting said armature to an attraction varying in intensity, however such variation may be produced in the magnet: and hence I

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claim the production of any given sound or sounds from the armature of the receiving instrument by subjecting said armature to an attraction varying in intensity, in such manner as to throw the armature into that form of vibration that characterizes the given sound or sounds."

[*Objected to as immaterial.*]

Ans. I decidedly object to being called upon to construe the claims of my patents; they are understood to be explained in the body of the specification, and the proper construction of the claims is for the court to decide. I must, therefore, decline to answer any such questions unless specially requested to do so by my counsel.

[*Counsel for complainants calls the witness' attention to the question, which, as counsel understands it, does not ask the witness to state what the claim means, but asks the witness to state what he thought it meant, or what meaning he had in his mind when it was made.*]

Witness continues:

To the best of my recollection my understanding of the claim was, that it referred to the use of the telephones described in the patent of January 30, 1877, as receiving instruments, and was intended to be broad enough to include any use that might be found for these instruments when employed as receivers, by virtue of the peculiar property believed to be possessed by the instrument, namely, that the character of the motion produced in it could be controlled by properly varying the attracting power of the magnet. In the body of the specification means were shown for producing the proper variations in the attracting power of the magnet, and my understanding was that the claim was not limited to these means.

I also understood that I specifically claimed the use of telephones substantially like those shown in that patent as receivers for the reproduction of articulate speech, independently of the form of transmitting telephone employed.

Cross-Q. 424. And did you, at the time, understand the first claim of the patent of January 30, 1877, as specifically claiming the use of telephones, substantially like those shown in that patent, as transmitters for the transmission of articulate speech, independently of the form of receiving telephone employed?

[*Objected to as immaterial.*]

Ans. I understood it as claiming the combination of a number of such telephones upon a single circuit, each one of which could be used either as a transmitter or a receiver.

Cross-Q. 425. Did you understand, at the time, that the first and second claims of your patent of January 30, 1877, were limited to the use of the telephone instruments constructed as shown in the drawings of that patent, and having among other things plate diaphragms, permanent magnets, with a coil on their end nearest the plate, a sounding box, a speaking tube, and means for adjusting the electro-magnet to the diaphragm as shown, and was it your intent that said claim should be so understood?

[*Same objection.*]

Ans. My impression is that my counsel were dissatisfied with the meagreness of my description of the speaking telephone in my patent of March 7, 1876, and desired to supplement this by fully describing and claiming in my patent of January 30, 1877, whatever was not specifically described and claimed in the former patent. I understood, therefore, that while the first claim of the patent was limited to the use of telephone instruments "substantially as shown and described" in the specification, that the courts would construe this in as liberal a way as possible consistently with the patent of March 7, 1876.

Cross-Q. 426. That does not answer my question at all, which enumerates five elements all found in your speaking telephone as described and shown in your patent of January 30, 1877, and inquired whether you understood and meant the 1st and 2d claims respectively of your January 30, 1877, patent to be limited to instruments and combinations of instruments having all five of those enumerated elements specifically referred to in the question. And it seems to me that you can answer this question by yes or no, without a long discussion.

(*Same objection.*)

Ans. To tell the truth I really did not know how much or how little was supposed to be covered by the claims. I presumed that my counsel knew what they were about in framing the claims as they were, and supposed that they had made the broadest possible claims for the speaking telephone, consistently with my patent of March 7, 1876, that the patent law of the country would allow. I believed, as I have stated before, that the courts would construe the expression "instruments constructed for operation substantially as herein shown and described" in as liberal a manner as possible, but as to how many or how few of the five elements alluded to could be legitimately included in the expression, I really did not know and thought the courts would decide.

Cross-Q. 427. And as to which of the said five elements would be

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included in the said two claims, or either of them, were you in the same ignorance at the time?

[*Same objection.*]

Ans. The elements that were specifically mentioned in the claims seemed to me to be the most important elements in the combination, namely, "armatures" substantially like those referred to and described in the body of the specification.

Cross-Q. 428. And did you understand said claims as limited to that specific kind of armatures?

[*Same objection.*]

Ans. That was my understanding, so far as my recollection serves me.

Cross-Q. 429. Do you mean an armature in plate form instead of in bar form?

[*Same objection.*]

Ans. My idea was—although, of course, I may be wrong as to the scope of the expression—that it meant a metallic armature alone, so arranged that it could be used in place of the armature and stretched membrane shown in my patent of March 7, 1876. I did not know whether it was limited to an armature which could be called a metallic plate, but was rather inclined to think so. The material of which it was to be composed was not limited to iron and steel, but might be of any material capable of inductive action.

Adjourned to March 3.

MARCH 3, 1883.

Cross-Q. 430. If it was your understanding at the time that the armature of your January 30, 1877, patent, was a plate armature of inductive material, instead of a bar armature of inductive material, and that the 1st and 2nd claims of said patent were so limited, then I suppose it was your understanding and intention in making the 5th and 8th claims of that patent, that said 5th and 8th claims were to be limited, not to a permanent magnet with a coil upon the end nearest to *any* armature, but only to a permanent magnet with a coil upon the end nearest to such *plate* armature; am I correct, and if not, please explain what your intention was in making said 5th and 8th claims?

[*Objected to as immaterial, and not opened by the direct examination; and because the claims speak for themselves.*]

Ans. I understood that these claims referred to the telephones shown in the patent, but as to the width or limit of the claims I simply did not know.

Cross-Q. 431. Did you not know whether you meant said 5th and 8th claims to be limited to the combination of a permanent magnet having a coil on the end of it, with an armature in form of a plate; or whether you meant them to be broad enough to include such magnet and coil with any form of armature that would enable them to be used in the transmission and reproduction of speech?

[*Same objection.*]

Ans. I really do not know definitely how much or how little was intended to be included in the scope of the claims. My impression is this: That it was the intention of this patent of January 30, 1877, to describe certain improvements that had been made in the construction of the speaking-telephone in my patent of March 7, 1876, and that the claims of the January 30, patent, therefore, so far as they described improvements not shown and described in the former patent, were applicable to the form of apparatus shown in that patent. I mean the patent of March 7, 1876. My impression is, therefore, that the claims 5 and 8 might perhaps not have been limited to the particular form of armature shown in the patent of January 30. I can, of course, give you only my crude impressions of the claims, without reference to what really was meant by counsel in drawing them.

Cross-Q. 432. How happens it that you got the impression that the 5th and 8th claims, which specifically describe the armature as a "*plate*," were *not* intended to be limited to a plate, but that the 1st and 2d claims, which only described it as an "*armature*," *were* intended to be limited to a plate?

[*Same objection.*]

Ans. When I commenced my reply I did not notice that the word "plate" was specifically employed, and I am, therefore, doubtful as to the meaning of the word "plate" in the claim. In completing my last answer as I did I thought that the plate might have been considered, as stated in the body of the specification, as a substitute for the membrane and armature of my March 7, 1876, patent.

Cross-Q. 433. As an electrician, which do you regard as the more limited expression, "armature" or "plate of iron or steel or other material capable of inductive action?"

[*Same objection.*]

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included in the said two claims, or either of them, were you in the same ignorance at the time?

[*Same objection.*]

Ans. The elements that were specifically mentioned in the claims seemed to me to be the most important elements in the combination, namely, "armatures" substantially like those referred to and described in the body of the specification.

Cross-Q. 428. And did you understand said claims as limited to that specific kind of armatures?

[*Same objection.*]

Ans. That was my understanding, so far as my recollection serves me.

Cross-Q. 429. Do you mean an armature in plate form instead of in bar form?

[*Same objection.*]

Ans. My idea was—although, of course, I may be wrong as to the scope of the expression—that it meant a metallic armature alone, so arranged that it could be used in place of the armature and stretched membrane shown in my patent of March 7, 1876. I did not know whether it was limited to an armature which could be called a metallic plate, but was rather inclined to think so. The material of which it was to be composed was not limited to iron and steel, but might be of any material capable of inductive action.

Adjourned to March 3.

MARCH 3, 1883.

Cross-Q. 430. If it was your understanding at the time that the armature of your January 30, 1877, patent, was a plate armature of inductive material, instead of a bar armature of inductive material, and that the 1st and 2nd claims of said patent were so limited, then I suppose it was your understanding and intention in making the 5th and 8th claims of that patent, that said 5th and 8th claims were to be limited, not to a permanent magnet with a coil upon the end nearest to *any* armature, but only to a permanent magnet with a coil upon the end nearest to such *plate* armature; am I correct, and if not, please explain what your intention was in making said 5th and 8th claims?

[*Objected to as immaterial, and not opened by the direct examination; and because the claims speak for themselves.*]

Ans. I understood that these claims referred to the telephones shown in the patent, but as to the width or limit of the claims I simply did not know.

Cross-Q. 431. Did you not know whether you meant said 5th and 8th claims to be limited to the combination of a permanent magnet having a coil on the end of it, with an armature in form of a plate; or whether you meant them to be broad enough to include such magnet and coil with any form of armature that would enable them to be used in the transmission and reproduction of speech?

[*Same objection.*]

Ans. I really do not know definitely how much or how little was intended to be included in the scope of the claims. My impression is this: That it was the intention of this patent of January 30, 1877, to describe certain improvements that had been made in the construction of the speaking-telephone in my patent of March 7, 1876, and that the claims of the January 30, patent, therefore, so far as they described improvements not shown and described in the former patent, were applicable to the form of apparatus shown in that patent. I mean the patent of March 7, 1876. My impression is, therefore, that the claims 5 and 8 might perhaps not have been limited to the particular form of armature shown in the patent of January 30. I can, of course, give you only my crude impressions of the claims, without reference to what really was meant by counsel in drawing them.

Cross-Q. 432. How happens it that you got the impression that the 5th and 8th claims, which specifically describe the armature as a "*plate*," were *not* intended to be limited to a plate, but that the 1st and 2d claims, which only described it as an "*armature*," *were* intended to be limited to a plate?

[*Same objection.*]

Ans. When I commenced my reply I did not notice that the word "plate" was specifically employed, and I am, therefore, doubtful as to the meaning of the word "plate" in the claim. In completing my last answer as I did I thought that the plate might have been considered, as stated in the body of the specification, as a substitute for the membrane and armature of my March 7, 1876, patent.

Cross-Q. 433. As an electrician, which do you regard as the more limited expression, "armature" or "plate of iron or steel or other material capable of inductive action?"

[*Same objection.*]

Ans. I do not profess to be a skilled electrician, but I should think the word "plate" had a more limited meaning than the word "armature."

Cross-Q. 434. If we regard the word "armature" as having its ordinary and well-known meaning in the art, do you know of any reason why the 1st and 2d claims of your patent of January 30, 1877, might not have been made and granted in your patent of March 7, 1876, if said last-mentioned patent described and illustrated in Fig. 7 a speaking telephone?

[*Same objection.*]

Ans. What is the usual definition of the word "armature" in the art?

Mr. Hill: I understand it to mean any body or piece of material capable of attraction or repulsion by a magnet, and so arranged in front of the pole or poles of a magnet as to be within its field of force and influenced thereby, or influencing a magnet thereby.

The Witness: I do not see any reason under this definition why the first and second claims of the patent of January 30, 1877, might not have been made and granted in the patent of March 7, 1876, as applicable to the apparatus shown in Fig. 7, if it had been understood that the armature was to be arranged substantially as shown in that patent of March 7, 1876.

Cross-Q. 435. The old Reis telephone already referred to in cross-question 383 and the answer thereto, was a telephone which was operated by the human voice, and by vocal sounds, and by sounds produced by musical instruments, was it not?

Ans. I presume so.

Cross-Q. 436. Did you ever see or test one of the Reis telephones?

Ans. I have seen a Reis telephone, but I do not remember to have tested any except of my own construction.

Cross-Q. 437. The Reis telephone is not capable of transmitting articulate speech, is it?

Ans. Certainly not.

Cross-Q. 438. What characteristics of sound do you understand the Reis telephone to transmit and reproduce?

(*Objected to as immaterial, and as not opened on the direct examination.*)

Ans. I understand that the Reis receiver will produce a sound

whose pitch or "frequency" corresponds to the frequency of the interruption of the current caused by the vibration of the Reis transmitter.

Cross-Q. 439. That is, it will reproduce pitch, but not loudness or quality; is that the fact?

(*Same objection.*)

Ans. I believe so.

Cross-Q. 440. Is any telephone apparatus which will not reproduce quality capable of use as a speaking-telephone?

(*Same objection.*)

Ans. Certainly not.

Cross-Q. 441. When did you begin your preparation of the specification of your patent of January 30, 1877?

Ans. I do not know. My recollection is that it was prepared in Washington while I was undergoing examination in a multiple telegraph interference, or about that time. To the best of my recollection that was some time in January, 1877.

Cross-Q. 442. Who paid the expenses of procuring your patent of March 7, 1876?

Ans. I do not know; I presume Mr. Sanders and Mr. Hubbard.

Cross-Q. 443. You have put in evidence in connection with your deposition various letters which passed between yourself and your parents, and between yourself and Mr. Hubbard, between the year 1873 and the year 1877; are those all the letters that passed between yourself and said persons within that time, and containing any reference to your multiple telegraph or telephone inventions?

Ans. I do not suppose that they were all the letters that passed on these subjects, but it is my impression that they were all the letters that could be found after a diligent search; at least so far as the speaking telephone is concerned. It is possible that letters were found relating to the multiple telegraph that were not put in evidence.

Cross-Q. 444. Before giving your deposition in the Dowd case in 1879, did you make search for all such letters and turn over all that you found to your counsel, Mr. Storrow and Mr. Smith?

Ans. I believe so.

Cross-Q. 445. Will you produce and put in evidence all the letters that you turned over to Mr. Storrow and Mr. Smith that were written in the years 1874, 1875, and 1876, and contained any allusion to your multiple telegraph or speaking telephone inventions?

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(*Complainants' counsel says that if there are any such letters they are in his custody in Boston, and he will produce them.*)

Cross-Q. 446. Have you any other papers that were written by you or by your direction in the years 1874, 1875, or 1876, and which contain any reference to your multiple-telegraph or speaking telephone inventions, but have not been put in evidence in this case?

Ans. Not that I know of.

Cross-Q. 447. Have you searched for such papers and put in evidence all that you found?

Ans. I made such search at the time of the Dowd case, and handed over everything that was found, to my counsel.

Cross-Q. 448. If there were any such papers containing reference to either of such inventions, and which have not been put in evidence, will you produce them and put them in evidence?

Ans. I will produce them.

Cross-Q. 449. In your patent of March 7, 1876, you stated various methods by which undulations may be caused in a continuous voltaic current. One of them was "by alternately increasing and diminishing the power of the battery;" did you contemplate employing that method in connection with your invention; if so, how?

Ans. Yes, I thought that this method might be employed in my invention; in the first place, by causing the elements of the battery alternately to approach and recede from another, and in the second place by causing the vertical vibration of the elements of a battery in the liquid in which they were immersed. The mechanical means by which such vibration was to be accomplished are shown, first, as respects multiple telegraphy, Figs. 5 and 6, and as respects the speaking telephone in Fig. 7. The part that it was desired to throw into vibration, was to be attached in the one case to a tuned reed, and in the other to a stretched membrane.

Cross-Q. 450. Did you ever make and test, prior to the date of your patent of March 7, 1876, the two forms of apparatus referred to in your last answer, or either of them? I mean the elements of the battery combined with means for causing them to vibrate towards and from each other, as one form; and the elements combined with means for vibrating them vertically in the liquid in which they were immersed as the other form.

Ans. I think not.

Cross-Q. 451. Have you done it since the date of that patent?

Ans. Yes.

Cross-Q. 452. Have you made and tested both forms since the date of the patent; and if so, when?

Ans. I am not sure that I tested both methods of varying the power of the battery, but I think I did. The experiment, as I remember it, consisted in attaching to a wooden sounding board one or more of the plates of a battery. In one form of the experiment I employed a regular volta pile consisting of copper and zinc disks separated by moistened cloth of some kind placed between a solid support and a wooden sounding board. I do not remember the date of my experiment.

Cross-Q. 453. What was the result of the experiment?

Ans. I do not remember. My impression is that sounds were produced from a telephone as a receiver placed in the same circuit with it.

Cross-Q. 454. Do you remember what kind of sounds—whether articulate speech or not?

Ans. No, I do not remember.

Cross-Q. 455. Referring to your undulatory current mentioned in your patent of March 7, 1876, when did you first discover means for utilizing that current on telegraph lines?

Ans. In the summer of 1874, although I was not sure of it until the 2d of June, 1875.

Cross-Q. 456. And that was the means which you tested and experimented with in June and July, 1875, was it?

Ans. Yes.

Cross-Q. 457. In the drawing of your patent of March 7, 1876, certain curves are represented in Fig. 4; so far as those curves correspond to curves graphically representing sound waves, do they show anything more than the curves of pitch and loudness?

Ans. I do not know what you mean by "the curves of pitch and loudness." The curves in Fig. 4, so far as they relate to sound vibrations, represent the to-and-fro motion of the air during the production of the musical tones considered, and they represent more than the movements that give rise to the sensation of pitch and loudness.

Cross-Q. 458. Wherein do they represent more than those movements?

Ans. In the details of the shapes of the curves. As I understand the matter, the amplitude of the vibration—that is, the vertical difference between the crest and the depression, controls the loudness of the sound heard; the frequency of the vibration—that is, the distance between successive crests, controls the pitch; and the character of the vibration—that

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is, the character of shape of the curve between successive crests, controls the quality or *timbre* of the sound heard.

(Adjourned to March 5th.)

MARCH 5, 1883.

Cross-Q. 459. Is it not physically impossible to draw a curve representing loudness and pitch without its having *some* shape between successive crests?

[*Objected to as immaterial, incompetent, and relating to matter not opened on direct examination.*]

Ans. I suppose so.

Cross-Q. 460. Then if you should draw any curve with the sole purpose and object of representing loudness and pitch, such curve when drawn would necessarily have some shape or other between successive crests, and might afterwards be said to that extent, to indicate to the eye more than loudness and pitch; might it not?

[*Same objection.*]

Ans. As I understand your questions they refer to the details of an imaginary curve, without reference to the correspondence between this curve and the vibrations of any given sound. I should think that the shape of the curve would indicate to the eye unintentionally more than loudness and pitch, but when you compare such curve with the vibration of an actual sound, whose pitch and loudness alone it has been desired to note, the shape of the curve between successive crests would not necessarily have any relation to the shape of the curve truly representing the vibrations of the sound; and the quality or *timbre* that might have been unintentionally indicated by your supposititious curve would not necessarily have any relation to the actual quality or *timbre* of the sound.

Cross-Q. 461. In Fig. 4 of your patent of March 7, 1876, were the curves drawn or caused to be drawn by you, to represent the actual movements of an air particle under the influence of any specific sound or sounds, as actually determined by you, or by any one else to your knowledge, or are they merely imaginary curves?

[*Same objection.*]

Ans. The curves were intended to represent the actual motion of the air under the influence of specific sounds. The curves were laid off from calculation by me when I made the original drawing from which Fig. 4 was copied. The curves A and B graphically represent the actual

movements of an air particle under the influence of two musical tones having the same amplitude of vibration, and simple in quality, differing only in frequency or pitch. In other words, they represent the form of vibration of two musical tones *simple* in quality, equal in magnitude, but different in pitch.

The curve A represents the movement of the air particle under the influence of that one of these sounds highest in pitch; the curve B, the movements due to the other, and the curve A+B represents graphically the actual motion of the air particle under the influence of those two sounds acting simultaneously. This resultant curve was obtained by adding together the curves A and B. The curve A+B is thus the algebraic sum of the curves A and B, and represents the resultant motion of the air particle under the influence of these two sounds acting simultaneously.

The phrase "the curve A×B, Fig. 4" in the body of the specification, should of course be a A+B, as in the drawing Fig. 4.

Cross-Q. 462. That does not quite answer my question, which I will try to make clearer. Did you actually determine by experiment the exact movement of a particle of air under the influence of any specific sound, and lay off such movement in the curve A or the curve B, or did you copy either of said curves from curves laid off by anybody else by actual experimental determination, or did you merely draw them at random?

[*Same objection.*]

Ans. The character of such movements as those shown in the first two lines of Fig. 4, A and B, had been fully determined by others, and the method of graphically representing them, and of combining them into a resultant, as shown in the drawings, Fig. 4, was well known in the state of the art at the time.

The curve to be used for such sounds as are represented by A and B was well known as the simple sinusoid, and I drew simple sinusoids for them, which I intended to be substantial, but which are probably not mathematical reproductions.

Cross-Q. 463. As the curves A and B, of Fig. 4, both represented simple sound vibrations of equal amplitude, they did not represent the difference between fundamental tones and overtones, did they?

[*Same objection.*]

Ans. No, they represented simple tones.

Cross-Q. 464. In your specification of the March 7, 1876, patent, as

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printed in the record and paged at the bottom, the description of these curves is contained on pp. 3 and 4, which would correspond to pp. 57 and 58 at the top; is there anything in that description which refers to the difference between fundamental tones and overtones; if so, what?

[*Same objection.*]

Ans. The reference is to motions represented by sinusoidal curves, and by the resultant or algebraic sum of sinusoidal curves.

When a composite sound is said to be composed of fundamental and overtones, I understand that the composite curve representing graphically the vibration of the sound can be split up into a number of simple sinusoidal curves corresponding to simple tones of the same pitches as those you have called fundamental and overtones. A composite vibration is the resultant or algebraic sum of the simple sinusoidal curves representing the fundamental and overtones.

Cross-Q. 465. In said specification said two pages contain a very clear description of how two simple vibrations of different pitch can be transmitted on the same wire at the same time, but does the specification contain any description or statement of how the modification of the fundamental tone by overtones controls the quality of the resultant sound?

[*Same objection.*]

Ans. It was well known at the time of the specification that the modification of a fundamental tone by overtones controls the quality of the resultant sound. This is not referred to in specific terms in the patent, but with a knowledge of the state of the art, it will be understood that when in the patent I speak of controlling the shape or form of a vibration, that this implies controlling the quality of the resultant sound.

Cross-Q. 466. Near the bottom of the second page of the specification of your patent of March 7, 1876, you set forth the advantages which you claim to derive from the use of an undulatory current; you did not state among those advantages that you could transmit quality or *timbre* of sound, or transmit articulate speech, did you?

[*Objected to as above, and also because the passage referred to speaks for itself.*]

Ans. At the bottom of the second page I set forth some of the advantages I claimed to derive from its use in multiple telegraphy. In other parts of the specification I stated in substance, that by its use I could transmit quality or *timbre* of sound and transmit articulate speech.

Cross-Q. 467. I do not find the words "quality," "*timbre*" or "articu-

late speech" in the specification or claim. If you meant quality, *timbre*, or articulate speech, why did you not say so, as you afterwards did in your English patent of 1877?

[*Same objection.*]

Ans. I did say so in substance.

Cross-Q. 468. Do you mean on page 7 of the specification, as printed in the record?

[*Same objection.*]

Ans. Certainly.

Cross-Q. 469. You state, in answer to cross-question 466, that at the bottom of the second page you set forth "some" of the advantages you claimed to derive from the use of the undulatory current in "multiple telegraphy;" as I read the passage to which you refer, there is no expression limiting it to *some* of the advantages, but it appears to include all the advantages you claim, and there is no specific reference to multiple telegraphy as distinguished from anything else. If you find any such limiting expressions in the passage, will you please point them out?

[*Objected to as above, and also because the question misstates the meaning and scope of the patent and of the passage particularly referred to.*]

Ans. The passage referred to specifically describes the advantages claimed to be derived from the undulatory current as a substitute for the intermittent current described in my former patents; all of which had reference to multiple telegraphy alone. In another portion of the specification I specifically state that there are other uses. The passage I refer to will be found at the foot of page 6, and is as follows:

"I desire here to remark that there are many other uses to which these instruments may be put, such as the simultaneous transmission of musical notes, differing in loudness as well as in pitch, and the telegraphic transmission of noises or sounds of any kind."

Cross-Q. 470. The passage on p. 6 is explained by its context, and especially by the sentence immediately preceding the one you quoted; and it does not refer to the *advantages* of the undulatory current, but to the *uses* to which certain described instruments may be put. The passage on p. 2, to which I referred in my question, commencing with the words, "The advantages I claim to derive from the use of an undulatory current in place of a merely intermittent one, are," and ending with the word "unnecessary," contains no limitations to *some* advantages, so far as I can see. If it does, will you point it out?

[*Same objection.*]

Ans. I do not know, of course, how the courts may construe these passages, but I know that in reference to the paragraph at the foot of p. 6 I intended that it should have been explained by the passages that succeeded it, that is, the passage commencing "When the armature C, Fig. 5, etc.," down to "A similar sound to that uttered into A is then heard to proceed from L."

In regard to the passage on p. 2, I intended to refer to the advantages of the undulatory current for only one use, namely, for the use to which I had put the intermittent current in my former patent referred to in the specification, that is, multiple telegraphy.

It is hardly necessary to repeat that I never proposed to transmit articulate speech by an intermittent current, hence this use of the undulatory current was excluded from the paragraph on p. 2 and described in the other part of the specification to which I have alluded.

*Cross-Q.*471. And it is *because* you never proposed to transmit articulate speech by an intermittent current that I should expect you, in setting forth the advantages of an undulatory current over an intermittent current, to mention that which is by far the greatest advantage of all, to wit, its capacity for transmitting and reproducing articulate speech. Have you now given all the reasons why you did not do so while professing to set forth all the advantages of one current as distinguished from those of the other?

[*Complainants' counsel objects as above, and also objects to a line of examination which consists in picking out isolated passages and attempting to force upon them a meaning which they do not necessarily and naturally bear by themselves, and which is forbidden by the context.*

Respondents' counsel leaves it for the Court to judge whether they have the meaning he has imputed to them, or not, and asks its careful attention to the point.]

Ans. As I understand the question, it assumes that I have not, in the specification, set forth the capacity of the undulatory current for transmitting and reproducing articulate speech, This is not so. I must refer you again to the passage at the foot of p. 6 commencing "I desire here to remark" etc., and ending on p. 7 with the words "A similar sound to that uttered into A is then heard to proceed from L."

Cross-Q. 472. I call your attention to an extract from a paper read by you October 31, 1877, before the Society of Telegraph Engineers in London, England, entitled, "Researches in Electric Telephony," said extract

commencing with the words "It occurred to me" and ending with the words "distinctly audible effects," and being as follows:

"It occurred to me that if a membrane as thin as tissue paper could control the vibrations of bones that were, compared to it, of immense size and weight, why should not a larger and thicker membrane be able to vibrate a piece of iron in front of an electro-magnet, in which case the complication of steel rods shown in my first form of telephone, Figure 19, could be done away with, and a single piece of iron attached to a membrane be placed at either end of the telegraphic circuit.

"Figure 22 shows the form of apparatus that I was then employing for producing undulatory currents of electricity for the purposes of multiple telegraphy. A steel rod A was clamped firmly by one extremity to the uncovered leg *h* of an electro-magnet E, and the free end of the reed projected above the covered leg. When the reed A was vibrated in any mechanical way the battery current was thrown into waves, and electrical undulations traversed the circuit B, E, W, E', throwing into vibration the corresponding reed A' at the other end of the circuit. I immediately proceeded to put my idea to the test of

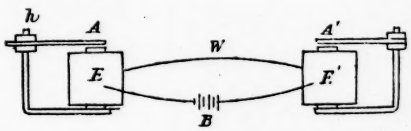

Fig. 22.

practical experiment, and for this purpose I attached the reed A, Figure 23, loosely by one extremity to the uncovered pole *h* of the magnet, and fastened the other extremity to the center of a stretched membrane of gold-beater's skin, *n*. I presumed that upon speaking in the neighborhood of the membrane *n* it would be thrown into vibration, and cause the steel rod A to move in a similar manner, occasioning undulations

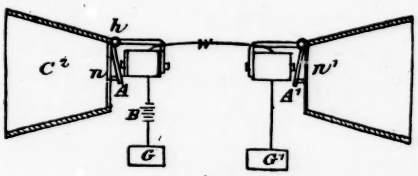

Fig. 23.

in the electrical current that would correspond to the changes in the density of the air during the production of the sound; and I further thought that the change of the intensity of the current at the receiving end would cause the magnet there to attract the reed A' in such a manner that it should copy the motion of the reed A, in which case its movements would occasion sound from the membrane *n'* similar in *timbre* to that which had occasioned the original vibration.

"The results, however, were unsatisfactory and discouraging. My friend, Mr. Thomas A. Watson, who assisted me, in his first experiment declared that he heard a faint sound proceed from the telephone at his end of the circuit, but I was unable to verify his assertion. After many experiments, attended by the same only partially successful results, I determined to reduce the size and weight of the spring as much as possible. For this purpose I glued a piece of clock spring, about the size and shape of my thumb nail, firmly to the center of the diaphragm, and had a similar instrument at the other end; we were then enabled to obtain distinctly audible effects."

I also call your attention to Mr. Thomas A. Watson's testimony, answers to cross-question 226 to cross-question 233, inclusive, which are as follows:

"*Cross-Int.* 226. To the best of your recollection, how long after March 10, 1876, was it that you first heard spoken words successfully transmitted over that magneto instrument?

Ans. To the best of my recollection, during March or April, 1876.

Cross-Int. 227. That instrument had a membrane diaphragm, I suppose, had it not?

Ans. I think it had.

Cross-Int. 228. Describe the armature, its size, shape, material, and manner of attachment to the diaphragm in that instrument.

Ans. All that I can remember about it is that it consisted of a piece of clock-spring shellacked to the membrane. I do not remember the dimensions at all.

Cross-Int. 229. Was that the first magneto instrument which had a metal armature attached to and supported only by the diaphragm?

Ans. It was the first I remember.

Cross-Int. 230. Who made that instrument, and when?

Ans. I think I did, just before it was tested.

Cross-Int. 231. It was made after March 10, 1876, was it not?

Ans. According to my recollection.

Cross-Int. 232. Did you ever see the instruments which Mr. Bell made or had made in 1875, which are represented in Fig. 7 of his first patent?

Ans. I consider Fig. 7 a diagram of the instruments I made for him in June and July, 1875.

Cross-Int. 233. In that part of Professor Bell's London lecture which I have just put in evidence, he refers to an apparatus which he tried, and which he illustrates by Figs. 22 and 23, and concerning which he then proceeds to make the following statement, to wit:

The results, however, were unsatisfactory and discouraging. My friend, Mr. Thomas A. Watson, who assisted me, in his first experiment declared that he heard a faint sound proceed from the telephone at his end of the circuit, but I was unable to verify his assertion. After many experiments, attended by the same only partially successful results, I determined to reduce the size and weight of the spring as much as possible. For this purpose I glued a piece of clock-spring, about the size and shape of my thumb nail, firmly to the center of the diaphragm, and had a sim-

ilar instrument at the other end; we were then enabled to obtain distinctly audible effects.

I suppose that the instrument here referred to by Mr. Bell, after he had glued the piece of clock-spring, about the size and shape of his thumb nail, firmly to the center of the diaphragm, and with which he was then able to obtain distinctly audible effects, was the same instrument to which you referred this morning as having been made in March or April, 1876, and after March 10, and through which you, for the first time, heard and understood words transmitted through a magneto transmitter, was it not?

Ans. I don't actually know, but am inclined to think so."

How does your recollection of the time when you first made that experiment with the piece of clock-spring, about the size and shape of your thumb nail, glued firmly to the center of the diaphragm, compare with Mr. Watson's recollection of the time?

Ans. My recollection agrees with his.

Cross-Q. 473. Referring again to your patent of March 7, 1876, I find on page 2 of the specification thereof, (Record, page 56,) reference to a pending application for letters patent, filed in the United States Patent Office, February 25, 1875; has that been patented, or is it still pending?

Ans. I think it has not been patented, but I am not quite sure.

Cross-Q. 474. Is that for a multiple telegraph?

Ans. Yes.

Cross-Q. 475. And is that invention incapable of transmitting articulate speech?

Ans. Certainly.

Cross-Q. 476. In that invention the intensity of the current is alternately increased and diminished, without actually breaking the circuit, is it not?

Ans. In one form of the invention it is.

Cross-Q. 477. Then the fact that the current is alternately increased and diminished in intensity, without actually breaking the circuit, is not a fact which distinguishes a speaking telephone from other contrivances that are not speaking telephones, is it?

[*Same objection.*]

Ans. It is not the mere increase and diminution, but the *character* of the variations in intensity that distinguishes a speaking telephone.

Cross-Q. 478. What characteristic of the current is it that distinguishes the speaking telephone from all other contrivances in which a current is used that is alternately increased and diminished in intensity without actually breaking the circuit?

[*Same objection.*]

Ans. The characteristic is, that the electrical undulations are similar in form to the vibrations of the air accompanying the utterances of a speaker, or accompanying the production of any sound that it is desired to reproduce by the apparatus.

Cross-Q. 479. What do you mean by "similar in form?"

[*Same objection.*]

Ans. That the undulations, if represented graphically, would be represented by similar curves.

Cross-Q. 480. Two exactly similar sounds must always be represented by exactly similar curves, must they not?

[*Same objection.*]

Ans. I would rather say that two exactly similar curves would represent two exactly similar sounds.

Cross-Q. 481. And if you employ a current of electricity to transmit on a wire and reproduce either of those sounds by any possible means whatever, the curves representing the undulations of the current must necessarily correspond to the curves of the sound waves; must they not?

[*Same objection.*]

Ans. That is my belief.

Cross-Q. 482. How does that differ from a law of nature—the necessary result of the laws of matter?

[*Complainants' counsel makes the same objection, and inquires if respondents' counsel proposes to submit questions of that kind for the opinion of the witness.*

Respondents' counsel says that he wants the light which this eminently qualified witness may be able to give upon the question.

Complainants' counsel replies that the examination of this witness upon questions of law, which are for the Court, or upon questions which have no bearing except upon the law of the case, is a mere waste of time.]

Ans. I really do not know how to answer your question. The combination of instrumentalities necessary to produce the effect, does not, so far as I know, naturally exist.

(Adjourned to March 6th.)

MARCH 6, 1883.

Cross-Q. 483. When you made the experiment of June 2, 1875, who was present beside yourself and Mr. Watson, if any one?

Ans. Only Mr. Watson was present.

Cross-Q. 484. Who beside yourself and Mr. Watson witnessed any of your experiments in June and July, 1875, relating to the transmission of intelligence by electrical means?

Ans. I don't remember.

Cross-Q. 485. Did you exhibit any of those experiments to Mr. Hubbard or Mr. Sanders?

Ans. I presume I must have done so.

Cross-Q. 486. Mr. Hubbard was examined as a witness for the complainants in June, 1879, in the case of the Bell Telephone Company *et al. vs.* Peter A. Dowd, which we have generally called the Dowd case, and which was then pending in the United States Circuit Court for the District of Massachusetts, was he not?

Ans. Yes.

Cross-Q. 487. In the deposition which he there gave, he testified in answer to interrogatory 7, as follows, did he not?

"Interrogatory 7. What did he (meaning you) say about speaking or singing in the vicinity of one of these harps and the effect of such action?

Ans. He had a good deal to say in the spring and summer of 1875, in regard to the sound waves produced by two musical instruments attached at opposite ends of the wire, and the ability by playing on one to produce the corresponding note in the other, and the possibility of causing a spoken word to be transmitted, but as I had no knowledge of or ear for music, and no belief in his ability to transmit vocal speech, I did not fully comprehend his ideas, or rather the mechanism by which he expected to produce his results. Mr. Bell, at my request, was in the habit from time to time of writing letters to me recording the progress that he had made, that I might have the knowledge of what he was doing and evidence to use, if it should be required, as I believed his inventions would be of very great pecuniary value and therefore probably litigated, and by reference to these letters I have refreshed my recollection of these subjects."

Ans. I find the passage you have quoted in his deposition as printed in the Dowd case. I have no knowledge what his testimony was except from reading that.

Cross-Q. 488. Have you, within the last three or four years, caused any search to be made among Mr. Hubbard's papers for the letters to which he refers in that answer?—I mean the letters which you were in the habit of writing to Mr. Hubbard regarding the progress which you made.

Ans. At the time of the Dowd suit I requested that such search should be made. I believe that it was made, and I believe that all the letters found were placed in the hands of my counsel.

Cross-Q. 489. Mr. Hubbard in his said deposition in the Dowd case

AMERICAN BELL TELEPHONE COMPANY, -4

was then examined by complainants' counsel in interrogatories 8 and 9, with reference to certain letters from yourself to him, dated respectively May 4, 1875, June 2, 1875, June 28, 1875, July 1, 1875, July 7, 1875, August 14, 1875, September 28, 1875; after which, in answer to interrogatories 10, 11, and 12, he testified as follows, did he not?

"*Int.* 10. All the letters dated at Salem refer to certain apparatus which the writer says he was using or experimenting with at Salem or Boston. Did you see any of the apparatus referred to in each of those letters respectively; and if so, when and where for the first time?

Ans. I made an arrangement with Mr. Charles Williams, Jr., manufacturer of electrical instruments, by which he furnished machinery, and one of his workmen, Mr. Watson, to make such instruments as Mr. Bell requested. I was in the habit of going very frequently to Mr. Williams' shop to see what was going on, and believe that I there saw the various instruments, as well as many others, described in these letters. I was more particular to see the things described in the letters, as they were supposed to be of the most importance, and should have noticed if there was any omission of the things described in the letters. Most of them I have a distant recollection of. On further reflection I think Mr. Bell may have made the first arrangement with Mr. Williams.

Int. 11. Do you remember any apparatus or experiment made at the time of those letters in which a sound was made on the receiving instrument, by plucking with the finger or by any other mechanical means, a reed on the transmitting instrument? If so, state whether you saw such an exhibition more than once.

Ans. I recollect distinctly what Mr. Bell calls the steel reed, described in his letter of July 7, 1875, plucking it by the finger and listening to the corresponding instrument vibrating, and think he had a bellows there which he operated, but am not so confident as to the bellows.

Int. 12. Whether or not you remember, during the period of these letters, seeing Mr. Bell have an apparatus in which the reed was attached to a membrane, and if so, how was the membrane to be moved or vibrated?

Ans. I remember distinctly two instruments, to each of which a membrane was attached, and think a reed was fastened to the membranes, but I am not certain, and that he undertook to speak to one membrane while Mr. Watson or myself was to hear at the other instrument. The instruments were so arranged that the membranes could be stretched till they were quite tight, like a small drum head; I could hear a sound, but could never distinguish any spoken words."

Ans. I find it so printed in said deposition.

Cross-Q. 490. Will you please put in evidence a copy of the caveat which you prepared in the fall of 1874, as stated in your answer to cross-question 344, but did not file?

Ans. I will, or so much of it as can be found. The text of all that I could find, and several of the drawings were printed in the Dowd case.

[*By consent a copy is made from the Dowd case and put in evidence herein as Exhibit Bell Caveat of* 1874.]

Cross-Q. 491. You have referred in your deposition to a caveat filed on the same day with the filing of your application for the patent of March 7, 1876. In the printed record of the Dowd case pp. 682–691 I find a copy of a caveat filed by Elisha Gray, February 14, 1876, and of the record of proceedings in the Patent Office relating thereto. Do you understand that to be the caveat on account of which your application was temporarily suspended, as referred to in cross-question 404?

Ans. Yes, sir.

[*By consent a copy of the caveat and its file and contents is made from the record of the Dowd case, and put in evidence as Exhibit Gray's Caveat.*]

Cross-Q. 492. Complainants' Exhibit No. 25, Bell's Toronto Drawing, printed opposite page 32 of the complainants' exhibits in this case, contains certain sketches, three in number. Under one of them are the words "Present form of multiple telegraph. One main battery. Closed circuit. Communication in both directions without induction coils. Patents not yet applied for. A. G. B."

Under another of them are the words "Discovery that led to the above form of the multiple telegraph."

And under another are the words, "First attempt to transmit the human voice. The varying pitch of the voice could be discriminated, but not the quality. A sort of muttering effect was perceived at the receiving end when a person talked very loudly at the other end."

On the original paper here referred to, in whose handwriting are the words that I have quoted from it?

Ans. In my handwriting.

Cross-Q. 493. If I understand your testimony correctly, that paper was made by you at Toronto, Canada, December 28, 1875, to show to Hon. George Brown, whom you were endeavoring at that time to induce to become interested with you in procuring an English patent on your invention, and to furnish capital therefor; is my understanding correct?

Ans. Yes; I expected him to take out other foreign patents as well as English.

Cross-Q. 494. On that paper the sketch immediately over the words, "first attempt," etc., bears a striking resemblance to Fig. 7 of your patent of March 7, 1876; was the sketch made as a copy of that figure, or was the figure in the patent a copy of the sketch? Or were the figure and

was then examined by complainants' counsel in interrogatories 8 and 9, with reference to certain letters from yourself to him, dated respectively May 4, 1875, June 2, 1875, June 28, 1875, July 1, 1875, July 7, 1875, August 14, 1875, September 28, 1875; after which, in answer to interrogatories 10, 11, and 12, he testified as follows, did he not?

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Cross-Q. 493. If I understand your testimony correctly, that paper was made by you at Toronto, Canada, December 28, 1875, to show to Hon. George Brown, whom you were endeavoring at that time to induce to become interested with you in procuring an English patent on your invention, and to furnish capital therefor; is my understanding correct?

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the sketch made independently of each other to represent the same idea in your mind?

Ans. Both this sketch and Fig. 7 of the patent were intended to illustrate the form of speaking telephone at which I had then arrived.

Cross-Q. 495. Were the drawings of your patent of March 7, 1876, made before or after December 28, 1875?

Ans. The original sketches, of which the drawings in the patent are copies, were made before that time. I do not know when the draughtsman's drawings were made, except that it was between the middle of December, 1875, and the middle of January, 1876.

Cross-Q. 496. On pp. 159 and 160 of complainants' record you have testified in regard to the exhibition of your instruments at the Centennial. One of the instruments which you exhibited there consisted, as you state, of a metallic ring supported horizontally, carrying a stretched membrane, to the center of which was fastened either a platinum wire or thin rod of carbon, you forget which, dipping into a little cup containing acidulated water; why did you acidulate the water?

Ans. To improve its conducting power.

Cross-Q. 497. Did you ever try that instrument with water not acidulated?

Ans. I cannot be sure that I tried that particular instrument, but I tried instruments substantially similar to it with plain water.

Cross-Q. 498. How did the results with plain water differ from the results with acidulated water?

Ans. In my paper read before the American Academy of Arts and Sciences, on the 10th of May, 1876, I described the difference of effect, in paragraph 13, as follows:

"A platinum wire attached to a stretched membrane completed a voltaic circuit by dipping into water. Upon speaking to the membrane, articulate sounds proceeded from the telephone in a distant room. The sounds produced by the telephone became louder when dilute sulphuric acid, or a saturated solution of salt, was substituted for the water. Audible effects were also produced by the vibration of plumbago in mercury, in a solution of bi-chromate of potash, in salt and water, in dilute sulphuric acid, and in pure water."

Cross-Q. 499. Can you state on what days your telephone was exhibited in operation at the Centennial Exhibition?

Ans. I exhibited it on Sunday, the 25th of June, 1876, as stated in my 134th answer, p. 160. I should think there were from fifty to one hundred people present. Mr. William H. Hubbard was with me on that occasion; the judges wanted some further exhibition, and I could not re-

main on account of professional engagements, and he remained at my request as a favor to me. He assisted the judges in operating the instruments during the following week in the judges' hall.

Cross-Q. 500. Then you do not know whether those instruments were on exhibition at the Centennial after that week, and in such manner that the general public who visited the Centennial had the same opportunity to see them that they had to see other machinery that was there on exhibition?

Ans. My recollection is that they remained there until the close of the exhibition. I have always understood that after the experiments made by the judges during the week referred to in the question, the instruments were restored to their original place and so remained till the close of the exhibition, as accessible to the public as any other exhibit in the building. I was not there personally after June 25th.

Cross-Q. 501. With which of the instruments tested at the Centennial did you get the best results there?

Ans. I do not know. I chiefly did the transmitting myself, and do not know what passed at the receiving end at that time except by hearsay.

Cross-Q. 502. How long were the lines on which you tested the instruments at the Centennial?

Ans. I do not know. The line extended from one part of the building to another, and the transmitting and receiving ends were sufficiently far apart to prevent the possibility of the speaker's voice being directly heard at the receiving end through the air.

Cross-Q. 503. In what building was this?

Ans. I would not undertake to state further than that it was in some gallery of—I presume—the main building.

Cross-Q. 504. Was there a battery used in the line in all those experiments at the Centennial?

Ans. In all that I had anything to do with.

Cross-Q. 505. You sent some of those instruments, or gave some of them, to Sir William Thomson, did you not?

Ans. No.

Cross-Q. 506. When did you give an instrument to Sir William Thomson?

Ans. It must have been about the end of July or early in August; when he was in Boston. He came from Canada to Harvard College in Cambridge and sent for me, as the experiments he had tried with my telephones at Philadelphia had interested him so much that he desired to

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know something more of the speaking telephone. I showed him instruments that had been constructed for the purposes of an experiment which it had been proposed to make between Boston and Philadelphia and I gave him some of these instruments.

Cross-Q. 507. Have you ever learned that he took those instruments which you gave him to England, and in a public exhibition or lecture there endeavored to transmit articulate speech through them, but could not succeed in doing it?

Ans. I have seen newspaper accounts of the lecture that he gave, but I never saw that stated.

Cross-Q. 508. Did you ever see the evidence, or a report of the evidence, that was submitted in the case of The United Telephone Company (Limited) *vs.* Alexander McLean, at Edinburg, in 1882; and if so, was not that fact testified to by Sir William Thomson in that suit?

[*Objected to as immaterial and incompetent.*]

Ans. I have not seen the evidence.

Cross-Q. 509. Did you never receive any communication from Sir William Thomson, after he returned to England, stating the fact that he had failed there to get the instruments, which you gave him, to transmit articulate speech?

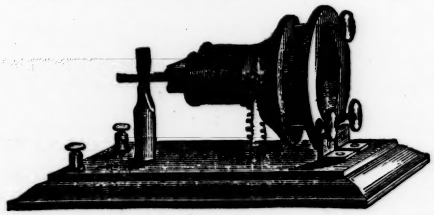
[*Same objection.*]

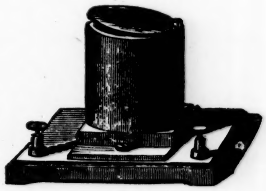
Ans. I have no recollection of any such communication. I have the impression that I received from some person, probably from Sir William Thomson, a copy of his address before the British Association for the Advancement of Science, but I have no recollection of any statement having been made as to any experiments whatever being made at the British Association. My recollection is that the instruments that I had given him were simply shown to the members of the association. Of course I may be wrong, as I was not there. I simply give the impression that has been left upon my mind by any descriptions I may have seen of what passed upon that occasion.

Cross-Q. 510. I find a portion of Sir William Thomson's address at the Glasgow meeting of the British Association in August, 1876, printed on pp. 239 and 240 of complainants' record in this case, with the following statement at the bottom of p. 240, to wit:

"A description of the electric speaking telephone with wood cuts of the apparatus given by Prof. Bell to Sir William Thomson, and the foregoing extracts from Sir William Thomson's address to the British Association and reprinted in the *Scientific American* supplement, February 10,

1877. These publications attributed the invention to Prof. Bell exclusively. The drawings in Engineering are as follows:—"





Do those wood cuts correctly represent the instrument which you gave to Sir William Thomson, as you stated?

Ans. I think so, substantially.

Cross-Q. 511. In the right-hand wood-cut on said page the circular plate at the top of the cylindrical box is represented as having one edge fastened down to the box by a screw and with the edge elsewhere raised above the top of the box—in other words, with a space between the edge of the plate and the top of the box, all around except where the screw is. Is that the way such instrument was arranged and operated at the Centennial?

Ans. No.

Cross-Q. 512. Were the two instruments that are shown in the above cuts constructed like the Centennial instruments; and if not, wherein did they differ from those instruments?

Ans. The instruments were substantially similar to those used at the Centennial, but the coils were of very high resistance. The receiving instrument also, to which you have directed special attention, was very much larger in diameter than that used at the Centennial. The disk upon the end of it was very much thinner than the corresponding disk in the Centennial instrument, and it was secured to one side of the iron box by a screw as shown in the drawing you have referred to. The tilting of the disk in Sir William Thomson's instrument was probably the result of some accident.

Cross-Q. 513. Would the instrument operate to receive and reproduce audibly articulate speech with the disk tilted as shown in the cut?

[*Objected to as immaterial.*]

Ans. I never tried it so. It would certainly not operate nearly so well.

Cross-Q. 514. With your knowledge and experience in telephony, do you know of any reason why it would not operate to audibly reproduce articulate speech with the disk tilted up as shown in said cut?

[*Same objection.*]

Ans. I should think it might have a strong tendency to a definite rate of vibration of its own, and hence would be under somewhat similar conditions to a tuned reed receiver.

Cross-Q. 515. Before giving the instruments to Sir William Thomson did you test them to see whether they worked successfully or not?

Ans. I can't say definitely.

Cross-Q. 516. Sir William Thomson has the reputation of being one of the most learned and scientific electricians in the world, has he not? And he was one of the judges at the Centennial Exhibition, was he not?

Ans. I believe so.

(Adjourned to March 7th.)

MARCH 7, 1883.

[*Respondents' counsel calls for the introduction of the entire paper read by Professor Bell, October* 31, 1877, *before the Society of Telegraph Engineers, entitled "Researches in Electric Telephony," an extract from which has heretofore been put in evidence by complainants, and puts the same in evidence as Exhibit Bell's London Lecture, complete.*]

Cross-Q. 517. In Mr. Gardiner G. Hubbard's deposition in the Dowd case, hereinbefore referred to, he testified as follows, in answer to interrogatories 15 and 16, did he not, to wit?

"*Int.* 15. State whether or not Professor Bell talked with you during the summer or autumn of 1875, upon the subject of the electrical transmission of speech, and how much his mind seemed to be occupied with that subject?

Ans. He did speak with me. His mind seemed to me to be occupied with it a great deal more than was to my pecuniary advantage, as I did not then believe the transmission of speech could ever be made commercially valuable, and I at several times remonstrated with him for spending so much time upon the subject.

"*Int.* 16. What did you want him to spend his time upon, and why?

Ans. Upon instruments that would transmit many musical notes simultaneously, or upon an autograph telegraph upon which he was working, as I believed such instruments would be of more pecuniary value than any instrument for transmitting speech."

Ans. It is so printed in the record of that case.

Cross-Q. 518. Have any of your multiple telegraph inventions ever gone into use for practical telegraph purposes?

Ans. I don't think so, as yet.

Cross-Q. 519. In your deposition you have referred to your letter of March 18, 1875, (p. 125), in which occurs this statement—"I have decided to give up all professional work for some weeks. I have put off all pupils and classes until the 12th of April;" after putting off your pupils and classes as stated in that letter, when did you again resume professional work with said pupils and classes, and how long did you continue it before putting it off again, or before giving it up?

Ans. My recollection is that I resumed my professional work at or about the time mentioned in the question—the 12th of April; and I gave up all work about the end of July. My connection with the Boston University was never completely severed, although my lectures became very irregular during this period.

Cross-Q. 520. Do you mean that after resuming about the 12th of April you continued your professional work with your pupils and classes until the end of July?

Ans. Yes; but as I have stated before, in June my professional work was dwindling away, and somewhere about the end of that month, or early in July, it failed me altogether, and my only source of income was then derived from my instruction to the little deaf and dumb boy of whom I have spoken before.

Cross-Q. 521. In your letter of May 24, 1875, I find you writing your parents as follows:

"Since I gave up my professional work and devoted myself exclusively to telegraphy I have been steadily gaining in health and strength, and am now in a fit state to encounter Mr. Gray or anyone else."

Is not that statement a little inconsistent with your present recollection; and if not, how do you explain the apparent discrepancy?

Ans. I do not see any discrepancy; as the matter lies in my recollection, there was a period of great physical prostration due to worry and excitement over the multiple telegraph interference with Mr. Elisha Gray, and to the continued strain caused by the numerous duties that devolved upon me in consequence of my attempting to carry on my experiments and my professional work at the same time. Then came the resolve to give up my professional work for a time. As a result of this my health improved, but my profession was practically broken up. Then came the experiments of June 2, 1875. This was followed by a period of great excitement over the speaking telephone, a period of constant experiment and sleepless nights. During this period my mind was also much worried by domestic matters and by pecuniary distress; and all

these things combined led to a complete breakdown of my health about the end of July or the commencement of August.

All these periods are very clear in my mind now, but the only way in which I have been able to fix the dates is by reference to the letters.

Cross-Q. 522. The apparent discrepancy to which I referred is this: that in answers 519 and 520, you stated in substance that you suspended your professional work from March 18 to April 12, 1875, then resumed it and continued it until about August 1st, although it practically dwindled away to almost nothing about July 1st; whereas in your letter of May 24, 1875, you speak of having given up your professional work and devoted yourself exclusively to telegraphy, and that that had already been done long enough to enable you to gain health and strength, and be then in a fit state to encounter Mr. Gray or anyone else.

If you were going on with your professional work in May, I do not understand why you should write that you had given it up and were devoting yourself exclusively to telegraphy, and hence I inferred that your memory must be somewhat at fault about it.

If I understand your last answer, you say that you still were in May, 1875, doing something at your professional work; do you mean that your suspension of it from March 18 to April 12 substantially broke it up, so that you regarded yourself in May as practically out of it, and as practically devoting your entire time to telegraphy?

Ans. In my answer to cross-question 344, I have stated that, towards the end of May or the beginning of June, my profession had dwindled away so much that I was obliged to obtain pecuniary assistance from my colleague, Professor Monroe.

I do not now know precisely what I meant by the passage quoted from my letter of May 24, but my impression agrees with what you have stated in the question.

Cross-Q. 523. Then, to sum the matter up in one statement—your professional work was entirely given up from March 18 to April 12, practically given up from April 12, to August 1, and with the exception of your Boston University lectures given up from that time forward; is that correct?

Ans. The only means I have of fixing the date of my giving up professional work is the letter of March 18, 1875. It was given up previously to the writing of that letter, and before one of the two journeys alluded to in the letter. If before the latter journey to New York, then it was very shortly before the date of the letter. If it was before I went

to Washington it would be either the early part of March, or even as early as the latter part of February. I resumed my professional work on my return from Canada in October.

Croes-Q. 524. With the qualifications contained in your last answer, is the statement in the question substantially correct?

Ans. I think so.

Cross-Q. 525. Referring to the experiment which you made in the presence of Prof. Henry, to wit, passing an intermittent current of electricity through an empty helix of insulated copper wire, as a result of which a noise, could be heard proceeding from the coil—please describe that noise.

Ans. As I remember it, it was a sort of spluttering sound having a musical character. I do not think I can describe the sound so as to give any definite idea of its character to a person who has never heard it.

Cross-Q. 526. At the time when you made that experiment what telephone did you know of that produced a similar sound to that?

Ans. The Reis telephone.

Cross-Q. 527. The Reis telephone was the telephone, then, that you referred to in your letter of March 18, 1875, (p. 126), as producing a similar sound; was it?

Ans. It was.

Cross-Q. 528. I judge, then, that you had before that time been experimenting with the Reis telephone, am I correct?

Ans. I do not think so. I had been experimenting with interrupters and had obtained a similar sound from an electro-magnet and from a coil having in its interior a rod of iron as in the Reis receiver. I remember that I showed that experiment to one of the professors of the Institute of Technology in the autumn or winter of 1874, and it led him to tell me of the Reis telephone; and I understood from him, at the time, that the Reis receiver was substantially similar in construction to the instrument we were using, and that the sound produced from it was like that he heard. I think this is what I had reference to in the letter from which you have quoted, for I am sure that I made no experiments with the Reis telephone.

Cross-Q. 529. Was there a Reis telephone at the Institute of Technology, in Boston?

Ans. There was, but I do not think it was complete. My recollection is that I saw one of the Reis instruments, either the transmitter or the receiver, I do not now remember which, at the Institute of Technology, and that Professor Henry showed me the other in Washington.

Cross-Q. 530. Did Prof. Henry show you the other at the time when you showed him the experiment referred to in your letter of March 18, 1875?

Ans. Yes, during that visit.

Cross-Q. 531. Prof. Henry had the entire Reis instrument, the transmitter and receiver at the Smithsonian, and I suppose showed you both, did he not?

Ans. He did.

Cross-Q. 532. When did you complete your autograph telegraph apparatus?

Ans. It was completed sufficiently to allow me to have it patented by patent No. 161,739, dated April 6, 1875, applied for March 6, 1875.

Cross-Q. 533. When did you complete the apparatus itself so as to have it in condition to be used on the line?

Ans. I think it could have been used upon a line as shown in the patent; the different parts of the apparatus had been completed and tested some time before March 6, 1875.

Cross-Q. 534. I mean when did you actually make an autograph telegraph apparatus to be used on some line?

Ans. I made the parts of such an apparatus as that shown in Fig. 1 of the patent, before March 6, 1875, but did not wish to spend time in constructing a large number of similar instruments until I had improved the apparatus that I have termed in the patent "a vibratory circuit breaker." The improved form of circuit breaker at which I arrived was patented June 6, 1876, No. 178,399. In June, 1875, I was at work combining a number of my multiple telegraph instruments together, with the object of putting my autograph telegraph into practical operation, when the experiments of June second temporarily diverted my mind from this object. During June and July the speaking telephone was the thing to which I devoted my energies, and all the applications of multiple telegraphy assumed only secondary importance. Few, if any, experiments relating to the autograph telegraph, or indeed to any electrical subject, were made between the end of July, 1875, and March, 1876. At that time I was again working at the combination of instruments necessary to put my autograph telegraph into practical operation, as Mr. Hubbard and Mr. Sanders thought that it would prove the most immediately valuable of all my inventions. It was their understanding that I should devote the greater portion of my time to the improvement of this application of multiple telegraphy, but I could not help working at the speaking tele-

phone, and more and more of my time was devoted to it; and the autograph telegraph has not yet been put into practical operation, although I believe it could be practically used if constructed and put into operation in the manner shown in my patents.

My autograph telegraph employed my multiple telegraph apparatus for the purpose of reproducing in distant places a *fac-simile* of a picture or handwriting, so that written messages could be transmitted. The vibrations of the tuned reed receivers of my multiple telegraph apparatus were used to make or break a local circuit through the instrumentality of what I have termed "vibratory circuit-breakers," and so cause marks to be recorded on paper or other material.

Cross-Q. 535. Before the spring of 1875 telegraphic apparatus for electrically transmitting to and reproducing at a distant station a *fac-simile* of a picture or handwriting, so that written messages could be transmitted, had been known to the world, had it not?

Ans. Yes.

Cross-Q. 536. You have referred to two visits which you made to Canada in the summer and fall of 1875; will you state in one answer the dates when you went and returned on those two occasions?

Aus. For the first visit I went on or about September 1, 1875, and arrived in Salem on my return on or about October 1; for the second visit, I left Salem on or about December 24, 1875, and got back somewhere about January 1, 1876.

(Adjourned to March 8.)

MARCH 8, 1883.

Cross-Q. 537. All of your Centennial instruments were provided with means for adjusting the distance between the armature and the poles of the electro-magnet, except the liquid transmitter which did not have any armature or electro-magnet, and was provided with means for adjusting the depth of the rod in the liquid; is not this the fact?

Ans. Yes.

Cross-Q. 538. So far as you know has any telephone instrument containing an electro-magnet and an armature ever gone into successful practical use for business purposes on telephone lines without means for adjusting the distance between the armature and the poles of the electro-magnet?

Ans. Oh yes, very many.

Cross-Q. 539. Has any instrument containing an armature attached to a membrane and an electro-magnet ever gone into successful practical use on telephone lines without means for adjusting the distance between the armature and the poles of the electro-magnet?

Ans. The improved instruments, with a metal plate instead of an armature and membrane, have proved so superior that I do not think that instruments of the latter description have gone into practical use.

Cross-Q. 540. Please give the names and residences of all the persons to whom you talked about your plan for transmitting articulate speech electrically, between the 1st of July, 1875, and the 7th of March, 1876, so far as you are now able to remember and state them?

Ans. That is a pretty difficult question to answer. I talked on this subject, I think, only to my most intimate and confidential friends, members of my family, etc. I also approached friends possessing means, upon the subject of assisting me in obtaining foreign patents, but how much I spoke to them concerning the nature of the new inventions I desired to patent I do not know. My impression is that I described in detail to such persons the inventions that had already been patented in the United States, or for which applications for letters patent had been filed, and stated that I had certain new inventions which I considered much more valuable, the nature of which I would describe if an arrangement was entered into. I was extremely cautious about speaking upon the subject of the production and reproduction of vocal utterances to others than the members of my own family, the family of Mr. Hubbard and the family of Mr. Sanders. To all the members of these families I spoke quite freely on the subject. I was so full of the subject that it is quite possible, nay probable, that I spoke to many other persons, but I cannot give names and addresses now.

Cross-Q. 541. Referring to your English patent applied for December 9, 1876, do you know who owns that patent now?

[*Objected to as immaterial and not calling for competent evidence.*]

Ans. I believe it is owned by the United Telephone Company, Limited, of London.

[*Respondents' counsel says that the English provisional specification, which has been put in evidence, constitutes only a portion of said patent, and he asks that the rest of the patent be put in evidence.*]

(Adjourned to March 9.)

MARCH 9, 1883.

Direct examination resumed by J. J. Storrow, Esq.

NOTE.—*The four Centennial instruments have been present during the latter part of the cross-examination.*

Q. 542. You have been examined concerning the differences and resemblances between the instruments Fig. 5 and the instruments Fig 7, of your patent of March 7, 1876.

I find from the specification and drawings that each of these instruments had an armature provided with a support having some elasticity, but I also find that the armature and elastic support in the instruments of Fig. 5 constitute a steel spring in the form of a free tuned reed; and that the armature and elastic support in the instruments of Fig. 7 consist of a piece of inductive metal deriving its elastic support from its attachment to a stretched membrane diaphragm. In your answers 374-400, and particularly in your ans. 377, 378, and 396, you stated in substance that the structure of Fig. 5 was not adapted for an apparatus intended to transmit and reproduce *timbre*, but that the structure of Fig. 7 was. Will you again state briefly the characteristic distinction between those features of the structures referred to, which, in your opinion at the time, adapted the one for a purpose which the other was not calculated to fulfil?

Ans. A free tuned reed, like that shown in Fig. 5, had a strong tendency to vibrate after a law of its own, and it was difficult to make it move at any other rate or in any other manner than that which was normal to it; but the mechanical structure of the apparatus shown in Fig. 7 adapted it to vibrate with substantially equal freedom at all rates and in any manner, so that it could copy the shape or the form of any vibration. Now, the quality or *timbre* of a sound is characterized by the shape or form of the vibration that causes it, and hence no apparatus can reproduce *timbre*, that is not capable of copying with substantial accuracy the form of a vibration.

Q. 543. (*De bene esse.*) Which of these characteristics did you, at the time you took out your 1876 patent, consider must be possessed by a transmitting instrument which was to be vibrated by sounds uttered by the human voice, and by means of whose vibrations undulations similar in form to the air vibrations caused by the sound were to be created?

[*Objected to as incompetent.*]

Ans. Those characteristics that I have attributed to the stretched membrane apparatus shown in Fig. 7.

Q. 544. (*De bene esse.*) Which of those characteristics did you, at the

time you took out your 1876 patent, consider should be possessed by a receiving instrument, which was to be acted upon by the electrical undulations mentioned in the last question with such effect that it would copy the motion of the transmitting diaphragm, and with the result that there would be heard to proceed from it a sound which would be similar to that uttered into the transmitter.

[*Same objection.*]

Ans. Again, the characteristics I have ascribed to the apparatus shown in Fig. 7.

Q. 545. (*De bene esse.*) In the description in the patent of the instruments Fig. 5, arranged in sets as shown in Fig. 16, I find it stated in substance that when several different electrical undulations are caused to simultaneously traverse a common electrical circuit and pass through all the instruments, each receiver will respond to that particular undulation which corresponds to its own normal rate of vibration, but will be left silent by the others, thus in effect analysing them and converting into sound one pre-designated set only. What, at that time, did you consider to be the advantage of such an analysing contrivance in a system of harmonic multiple telegraphy?

Ans. In such a system the messages were to be transmitted by musical signals of different pitch; the signals for each individual message being all of the same pitch. I conceived it to be an advantage to have the messages separated from one another at the receiving end by an analysing instrument that would respond only to the signals of one message, rather than to have the analysing process performed by the ear of the operator.

Q. 546. (*De bene.*) Which of the characteristics described in your 542d answer did you at the time consider would adapt a receiver to perform this work of analysis?

[*Objected to as incompetent.*]

Ans. Those that I described as characteristic of a free tuned reed.

Q. 547. (*De bene.*) I now call your attention to your second telephone patent of January 30, 1877. Comparing the instrument therein shown with that shown in Fig. 7, of the patent of 1876, I find the difference of structure to which the most prominence is given to be described in the following language:

"In my patent No. 174,465, dated March 7, 1876, I have shown as one form of transmitting instrument a stretched membrane to which the armature of an electro-magnet is attached, whereby motion can be im-

parted to the armature by the human voice, or by means of a musical instrument, or by sounds produced in any way.

"In accordance with my present invention I substitute for the membrane an armature shown in the transmitting and receiving instruments alluded to above, a plate of iron or steel capable of being thrown into vibration by sounds made in its neighborhood."

Did you, or did you not, consider at the time you took that patent that the alteration made in the instrument Fig. 7, of the first patent, in substituting the new diaphragm for the old, changed the nature of the operation of the instrument?

[*Objected to as incompetent.*]

Ans. I did not consider that it changed the nature of the operation in any way, but simply enabled the instrument to operate more perfectly.

Q. 548. (*De bene.*) In your first patent you assign to Fig. 5 the work of analyzing the electrical undulations and converting into sound only one set of them, and you assign to the instruments of Fig. 7 the work of transmitting and reproducing noises and sounds of all kinds, including the utterances of the human voice. In your second patent you expected to accomplish multiple telegraphy and also the transmission of articulate speech, and showed only *one instrument for both purposes.* Did you or did you not, when you took the second patent, believe that the instrument Fig. 7 in the improved form shown in the second patent, could perform the work of analysis which you have stated that the free tuned reed instrument Fig. 5, of the first patent was expected to perform?

[*Objected to as incompetent and leading, and as stating the first patent incorrectly.*]

Ans. I did not.

Q. 549. (*De bene esse.*) When using the improved instrument of the second patent for the purposes of multiple telegraphy as therein set forth, did you expect that the work of analysis would be performed in some way; and if so, how?

Ans. I expected the work of analysis to be performed by the ear; the sounds produced by the instruments were so loud that I thought a little practice would enable an operator to fix his attention upon sounds of a certain pitch and ignore all others. It seemed to me this would be very readily accomplished with the aid of a resonator held to the ear.

Q. 550. (*De bene esse.*) If there is any passage in the second patent which expresses the views indicated in your last answer, will you please read it?

Ans. I find on page 65 of complainants' record, the following paragraph in the patent:

"When two or more musical signals are being transmitted over the same circuit, all the telephones reproduce the signals for all the messages; but as the signals for each message differ in pitch from those for the other messages it is easy for an operator to fix his attention upon one message and ignore the others.

"When a large number of dispatches are being simultaneously transmitted, it will be advisable for the operator to listen to his telephone through a resonator, which will re-inforce to his ear the signals which he desires to observe. In this way he is enabled to direct his attention to the signals for any given message without being distracted or disturbed by the signals for any other messages that may be passing over the line at the time.

"The musical signals, if preferred, can be automatically received by means of a resonator, one end of which is closed by a membrane, which vibrates only when the note with which the resonator is in unison is emitted by the receiving telephone. The vibrations of the membrane may be made to operate a circuit-breaker, which will actuate a Morse sounder or a telegraphic recording or registering apparatus."

Q. 551. (*De bene esse.*) I now call attention to your first patent of March 7, 1876. In the employment of instruments like Fig. 5 arranged in sets as shown in Fig. 6, for the purpose of sending two or more telegraphic signals or messages simultaneously over the same circuit, did you think the *form* of the electrical undulation which each instrument produces, material or essential for accomplishing the result stated?

[*Objected to as leading and incompetent.*]

Ans. No; neither material nor essential.

Q. 552. (*De bene.*) In the employment of instruments like Fig. 7 for the purpose of transmitting the utterances of the human voice as set forth in that part of the patent which particularly refers to Fig. 7, did you think the *form* of the electrical undulations which the instrument produced material or essential for accomplishing the result stated?

[*Same objection.*]

Ans. I thought it was *the* essential thing for this purpose.

Q. 553. (*De bene esse.*) In an attempt to employ the instruments of Fig. 5, arranged in a system as shown in Fig. 6, for the purpose of the simultaneous transmission of two or more telegraphic signals or messages over the same circuit, would such transmission be accomplished if each transmitting instrument always produced a simple pendulous electrical undulation of the same rate or frequency, differing in frequency from those produced by the others?

Ans. Certainly.

Q. 554. (*De bene esse.*) In an attempt to employ the instruments of Fig. 7 for the purpose of transmitting the utterances of the human voice, so that the sound heard to proceed from the receiver would be similar to that uttered into the transmitter, would such transmission be accomplished if the electrical undulations produced by the transmitter were all simple pendulous vibrations, and all of the same rate or frequency?

Ans. Certainly not.

Q. 555. (*De bene esse.*) Did you yourself draw any of the claims of your patent of January 30, 1877, and, if so, which?

Ans. Yes; I drew the third claim.

Q. 556. You state at the close of your 296th answer, that few, if any experiments of any kind were made between the end of July, 1875, and the date of the patent. Does that statement refer to membrane instruments alone, or does it refer to all the instruments mentioned in the patent?

[*Objected to because the statement shows for itself.*]

Ans. To all.

Q. 557. (*De bene esse.*) Did you, before the date of the patent, make any experiments with undulatory current instruments, having in view a multiple telegraph system, and, if so, during what periods?

Ans. Yes; during May, June, and July, 1875.

Q. 558. You were asked during your cross-examination to approximate as nearly as you could the time when, during the summer of 1874, you conceived your method and apparatus for transmitting speech as you had stated. Had you at that time examined, or did you then know of, the entries in your father's diary other than those printed in his deposition in the Dowd case?

Ans. I did not.

Q. 559. Will you now look at the entries made in his diary in the summer of 1874, as given in his deposition, and state if they enable you to approximate any more clearly the date of that conception?

Ans. Yes; they have refreshed my memory concerning the nature of my occupations during the early part of my visit to Canada, and have convinced me that I conceived my method and apparatus for transmitting speech before the date of my arrival in Canada, July 11, 1874. On July 14, 1874, I left my father's house for Bellville, Ontario, to attend the Eighth Convention of American Instructors of the Deaf and Dumb, which met in that city from July 15 to July 20. I delivered several addresses at that convention, and the preparation for these occupied my time at my father's house from the time of my arrival there, July 11,

until the meetings of the convention. I returned to my father's house on Tuesday, the 21st of July, and I had not time between that date and Sunday, the 26th of July, to develop and mature the method of transmitting speech that I explained to him on that day, and that led to the entry in his diary, "Electric speech (?)."

I, therefore, now feel perfectly sure that my method and apparatus for transmitting speech electrically was conceived in the summer of 1874, a considerable time before the 11th of July.

[*Answer objected to by respondents' counsel as stating not facts but arguments and conclusions; and as assuming things not proved.*]

Q. 560. Will you please state what were your occupations between the early part of July, 1875, and the time when you went to Canada, about the first of September, 1875?

Ans. In July, 1875, I resided in Salem, Massachusetts, where I gave instruction for two or three hours a day to the little deaf pupil of whom I have before spoken. In the early part of that month I went to Boston every day, the journey occupying about one hour. I remained at my rooms in the Boston University for one hour or more according as I had pupils or not, and I devoted the remainder of my time within working hours to my electrical experiments. After six o'clock in the evening after Mr. Williams' workshop closed, I either returned to Salem or received private pupils at my room in the Boston University. During the latter part of the month my visits to Boston became irregular on account of ill-health, and I only made the journey for the sake of carrying on my experiments, my professional work having failed me. About the end of July, the experiments were suspended on account of the illness of Mr. Watson, and when he had recovered I was in no condition to resume work. By about the commencement of August, my health had completely broken down, and during that month I hardly left Salem, excepting for an occasional visit to Mr. Hubbard's house in Cambridge. I made no experiments during this month, but occupied my time in thinking and pondering over the experiments that had been made in the preceding months. About the end of August or the first of September, I left Salem for my father's house in Canada.

Q. 561. You say you occupied your time in thinking and pondering over your experiments; if you have any paper written during that month of August, 1875, which expresses your state of mind and your conclusions from all that you had thought and done up to that time, upon the subject of the invention set forth in your patent of March 7, 1876, will you please read it?

[*Objected to as new matter not referred to in the cross-examination.*]

Ans. On the 14th of August, 1875, I wrote to Mr. Hubbard the following letter, which is already in evidence, and printed as part of my answer 94, page 147.

"SALEM, MASS., *August 14th*, 1875.

"Dear Mr. HUBBARD:

"On glancing back over the line of electrical experiments, I recognize that the discovery of the magneto-electric current generated by the vibration of the armature of an electro-magnet in front of one of the poles, is the most important point yet reached. I believe that it is the key to still greater things.

"The effects produced, though slight in themselves, appear to me so great in proportion to their cause, that I feel sure that the future will discover means of utilizing currents obtained in this way on actual telegraph lines.

"So important does it seem to me to protect the idea, that I think some steps should be taken immediately towards obtaining a caveat or patent for the use of a magneto-electric current, whether obtained in the way stated above, (by the vibration of permanent magnets in front of electro-magnets,) or in any other way. I should wish to protect it specially as a means of transmitting simultaneously musical notes differing in *intensity* as well as in pitch.

"I can see clearly that the magneto-electric current will not only permit of the actual copying of *spoken utterance*, but of the simultaneous transmission of *any* number of musical notes (hence messages) without confusion.

"The more I think of it the more I see that the method of making and breaking contact so many times per second, is only the *first stage* in the development of the idea.

"When we can create a pulsatory action of the current, which is the *exact equivalent* of the aerial impulses, we shall certainly obtain exactly similar results. *Any number of sounds* can travel through the same air without confusion, and any number should pass along the same wire.

"It should even be possible for a number of spoken messages to traverse the same circuit simultaneously, for an attentive ear can distinguish one voice from another, although a number are speaking together.

"Don't you think it would be well to take out a *caveat* for the use of the magneto-electric current?

"In its present undeveloped state, it might be unwise to let Gray know anything about it, unless, indeed we could secure the *principle* of it in a patent.

"Yours respectfully,

"A. GRAHAM BELL.

"GARDINER G. HUBBARD, Esq.,
"*Cambridge.*"

Q. 562. It has already appeared that you passed the month of September, 1875, in Canada at your father's; please state what occupied your time during that month, and what attention you devoted to any electrical matters.

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Ans. I went to Canada chiefly for the sake of my health. I spent a great portion of my time (as I remember after reading the notes in my father's diary) in the open air, taking plenty of horseback exercise. I had no means of making electrical experiments, but I attempted, as I found strength and inclination, to reduce to writing my ideas concerning the production and utilization of undulatory currents for the purposes of the speaking telephone and the multiple telegraph. I also occupied a portion of my time in trying to interest friends in my inventions. I hoped to make some pecuniary arrangement for my support in Boston, so that upon my return to that city I might devote all my time to my electrical researches. It was my intention to patent what I had done at once, in the United States and abroad, and I thought that in return for an interest in my foreign patents I could induce some friend to make the arrangement I desired, and to undertake all the expense of the foreign applications. Before I left Canada I had arrived at an understanding of this kind with the late Hon. George Brown, of Toronto, and his brother, Mr. Gordon Brown.

Q. 563. Please state what occupied your time between your return from Canada, about October 1, 1875, up to February 14, 1876, when you filed the application for your patent, No. 174,465, dated March 7, 1876?

Ans. Immediately upon my return to Salem in October, 1875, I prepared the specification for my patent of March 7, 1876, so as to be ready to make application for letters patent in the United States and abroad, the moment a definite arrangement should be concluded with Mr. George Brown and his brother. Mr. George Brown had specially requested me to take no steps in America that could be prejudicial to the patents he proposed to take out abroad. I therefore waited anxiously for the definite reply to my proposition that had been promised, but it never came. In the meantime my time was occupied for two or three hours a day as before, with the instruction of my deaf pupil in Salem. Not hearing from Mr. George Brown I was soon placed in a serious dilemma. There seemed to be no alternative but to give up either my profession or my electrical experiments. I *could* not give up my profession and I *would* not give up my experiments. In regard to my professional work I was bound to deliver lectures in the Boston University, for which I had already received the payment, and the income from which had already been spent in supporting myself while carrying on my electrical researches. My little deaf pupil was my only means of support, and my

instruction to him necessarily occupied a very considerable portion of my time, quite independently of the time required to travel backwards and forwards between Boston and Salem. In regard to my electrical work I could, of course, have made some arrangement with Mr. Sanders and Mr. Hubbard for my support while carrying on researches, but for the reasons already given I decided not to do so. There was another reason that powerfully influenced my decision at this time, namely: That I looked forward to the possibility of marriage. I knew from the past that if I attended properly to my profession it would be capable of yielding me an honorable support. On the other hand I believed so firmly in the pecuniary value of my inventions that I was willing, and had offered, to risk everything by throwing professional work entirely aside and devoting myself exclusively to the improvement of my apparatus if only Mr. Brown had acceded to my proposition.

(Adjourned.)

MARCH 10th, 1883.

Witness continues: It was my belief that if the pecuniary arrangement I desired could be concluded with Mr. George Brown and his brother, that I could have repaid Prof. Monroe the money I had borrowed from him, and have been released from my obligation to lecture in the Boston University, for Prof. Monroe was not only a very dear personal friend, but was dean of the faculty to which I belonged. He knew something of my experiments and ideas, was interested in them, and would undoubtedly have done what he could to oblige me. Under my circumstances it was absolutely impossible for me to get along without attending to my profession; and it was difficult to see how I could do this without giving up my experiments. On the other hand, I felt that, even had I desired to do so, I was bound in honor to Mr. Sanders and Mr. Hubbard, to put my inventions to practical commercial use, so that they might be remunerated for the money they had already expended upon them. It will be understood, then, that in October, 1875, I was placed in a very serious dilemma. I expected from day to day to hear from Mr. George Brown, and while waiting I occupied myself in writing and rewriting my specification. I felt that I had made a great invention, that I had invented what is now known as "the speaking telephone." I tried to embody this in my specification, and to express it in language that should be scientifically accurate and complete, and to the best of my ability I did so. I did not know much about the patent laws of the

country, but believed that the counsel who might be employed by Mr. George Brown and his brother, or by Mr. Sanders and Mr. Hubbard, would make the necessary alterations in the phraseology, if any such alterations were deemed necessary. Mr. Hubbard and Mr. Sanders were very anxious to have my specification filed at once in the United States Patent Office, but I believed the invention to be so important and so valuable that I wanted it to be taken out abroad as well as in America, and, therefore, delayed the filing, hoping to hear from Mr. George Brown and his brother.

Towards the end of November the expostulations of Mr. Hubbard and Mr. Sanders had their effect; we would no longer wait for Mr. Brown. In the early part of December Mr. Hubbard took my specification to Washington to have it submitted to his counsel there; but at my earnest request he promised that no steps should be taken in the United States Patent Office until I had had a last chance to interest friends in Canada, so as to have my foreign patents taken out simultaneously with my American patent. On account of the nature of my engagements this opportunity would not arrive until the Christmas vacation.

Towards the end of October, 1875, when I began to despair of hearing from Mr. Brown, I was called upon to face the problem—What should I do?—and I came to the conclusion that the quickest way to get back to my electrical experiments was to devote my attention exclusively for a time to my professional work, and I formulated a plan which I thought would soon permit me to devote a very considerable portion of my time to the electrical researches, and yet allow me to hold my profession together as a contingent support for the future.

My experiments in teaching articulation to the deaf and dumb had aroused a deep interest all over the country among those interested in the education of this class, and there was a great demand for teachers who were practically acquainted with my methods of instruction. It seemed to me that if this demand were to be made known it might enable me to form a large normal class of persons desiring to become articulation teachers, and that after a short time these persons would be competent themselves to teach. It would then be possible for me to relinquish into their hands the instruction of individual pupils, and thus allow me to devote the time that would otherwise be spent in this class of work to the prosecution of my electrical researches, and to the improvement of the speaking telephone, so as to bring it into general commercial use.

About the end of October, or the commencement of November, I commenced to carry this plan into practical effect by lecturing at various normal schools upon the subject of articulation teaching; and some time in the early part of November I succeeded in gathering together a large normal class. I found the work involved, however, a great deal more than I had expected. I had very few private pupils by whose instruction I could exemplify my methods of teaching, and I was, therefore, obliged to open a free class for the adult deaf mutes of the city of Boston, which met in the evenings at my rooms in the Boston University. I addressed the different deaf-mute societies at some of their meetings, urging upon the members the advisability of their taking this opportunity, probably the only opportunity that would ever occur to them, of acquiring the art of speech. In response to my appeal quite a number of deaf mutes made their appearance. I made a number of attempts, during November and December, to carry on my experimental work, but my private pupils began to increase in number, and I found that the work of organizing and arranging my classes and private pupils, according to the plan I have stated above, involved such an expenditure of time, and such an amount of personal labor that it was not until somewhere about the middle of February, 1876, that I was enabled to carry out the plan in its entirety.

In the meantime, as I have stated above, it was my intention to make another attempt during the Christmas vacation, to interest friends in Canada to take out foreign patents. I accordingly left Salem for Canada on or about the 24th of December, and returned about the 1st of January, having in the meantime concluded a definite agreement with Mr. George Brown and his brother. I could not, at that time, ask them for a cash payment sufficient to support me, as I was then carrying out the organization of my professional work in the manner stated above. I asked them, however, and they agreed to make me a sufficient allowance o pay the rent of special rooms in which the experiments might be carried on, as I had been much troubled by reports among the workmen in Mr. Charles Williams' workshop, that strangers had been observing my apparatus and had apparently been making notes. In consequence of this arrangement I took rooms in Exeter Place, Boston, to which the apparatus in Mr. Williams' workshop was removed somewhere during January, 1876.

My recollection is, that at this time also I entrusted the education of the little deaf pupil, to whom I have so often alluded, to one of my nor-

mal teachers, and came to Boston to live, thus saving a considerable portion of my time. In consequence of the agreement with Mr. Brown and his brother my specification was returned to me from Washington, to be sworn to in Boston, and I was much pleased to observe that it had not been found necessary to alter the phraseology. I was extremely anxious to be once more at work upon the development and improvement of the speaking telephone, for, although I firmly believed that it had been already sufficiently perfected to enable me to patent it, and claim the essential features that I believed would be found common to all subsequent speaking telephones, still I thought that the speaking telephone could be wonderfully improved, and I was feverishly anxious to see it put into commercial use. In spite of all my efforts, however, it was not until late in February that I was able to settle down to steady and regular experimental work. But just as I had commenced to do this I was summoned to Washington by a threatened interference with my application, which had been filed February 14, 1876, to which interference I have already referred in my answer to cross-question 404 and cross-question 405, (pp. 1628 and 1629.)

My application was not filed before this date, in consequence of a promise that I had made to Mr. George Brown, who had then gone to England, that the American application should not be filed until a cablegram had been received from him telling me that I might do so without prejudice to the foreign applications. I returned my specification to Washington, either to Mr. Hubbard or to Messrs. Pollok and Bailey, immediately after it was sworn to in Boston, January 20th, so as to be ready to be filed in the Patent Office upon telegraphic notice. I waited anxiously for the promised cablegram from Mr. Brown; but at last Mr. Hubbard became tired of waiting, and on the 14th of February the application was filed in the United States Patent Office without my knowledge.

(*So much of the above answer as states conversation with or communications by others is objected to by respondents' counsel as hearsay; and all statements of the witness's opinions, thoughts, and beliefs are objected to as incompetent.*)

Q. 564. Please produce and read as part of your answer the agreement with the Messrs. Brown, which you have just referred to.

Ans. I produce it. It is accompanied by a letter, written and delivered at the same time. The agreement and letter are as follows:

"Memorandum of agreement made and concluded this twenty-ninth day of December, 1875, by and between A. Graham Bell, of Salem, Massa-

chusetts, United States, George Brown, of the city of Toronto, Canada, and John Gordon Brown, of the same city:—

Whereas, the said A. G. Bell has invented certain new and useful methods of, and apparatus for, telegraphing, for which he has obtained one patent, and has applied for two more, and is about to apply for other two patents or more in the United States of America; and the said A. G. Bell has assigned to Thomas Sanders, of Haverhill, Massachusetts, United States, and to Gardiner G. Hubbard, of Cambridge, Massachusetts, United States, all his right, title, and interest to the said inventions and patents in the United States of America, to the extent of one third thereof to each; and, whereas, the said A. G. Bell is desirous of associating with himself in taking out patents for the said inventions in Canada, Great Britain, and any other countries into which they may deem it expedient to do so, and in disposing of rights to use the said patent inventions, the above-named George Brown and John Gordon Brown, of Toronto, and they have agreed thereto. Now, therefore, the said A. G. Bell and the said George Brown and John Gordon Brown, hereby severally agree that the said A. G. Bell shall assign to the said George Brown and J. G. Brown, one fourth interest each in all his said patents and inventions that are now or may be hereafter taken out in any other parts of the world except the United States of America, and in all his (the said A. G. Bell's) right, title, and interest therein. And the said George Brown and John Gordon Brown, shall, in equal proportions of one half each, pay all the expenses of getting out the said patents, and of any interference or interferences therewith beyond the United States. And it is further agreed between the said parties hereto, that if any of the said inventions shall prove to be of sufficient value, that then the said parties shall transfer all their rights to a company, to be organized for the purpose of more easily managing and controlling the said patents, the stock that shall be issued for the said patents to the said parties being in proportion aforesaid of one half to A. G. Bell, one quarter to George Brown, and the remaining quarter to J. G. Brown.

This agreement to be binding on our heirs and legal representatives.

Signed, sealed, and delivered at Toronto the 29th December, 1875.

ALEXANDER FRASER,
Witness.

A. GRAHAM BELL, [L. S.]
GEORGE BROWN, [L. S.]
J. G. BROWN, [L. S.]

TORONTO, 29*th December*, 1875.

Professor A. G. BELL, *Salem, Mass.:*

DEAR SIR: We hereby agree to pay you twenty-five dollars in United States currency each of us per month while you are perfecting your inventions in telegraphy and preparing the necessary specifications for taking out patents under our agreement of this date; said monthly payments to cease when the patents are obtained, and in no case to extend beyond six months.

Yours truly,

GEORGE BROWN,
J. G. BROWN.

Q. 565. Did the Messrs. Brown pay you any money under that agreement; and if so, how much, and when?

Ans. To the best of my recollection fifty dollars were paid in one payment, I think, about the end of January or the beginning of February.

Q. 566. In your letter to Mr. Elisha Gray, dated March 2, 1877, found in answer to cross-question 402, p. 1627, I find the following:

"My specification had been prepared *months* before it was filed, and a copy had been taken to England by a friend. I delayed the filing of the American patent until I could hear from him. At last the protests of all those interested in my invention deprecating further delay, had their effect, and I filed my application without waiting for a conclusion of the negotiations in England."

Does that paragraph refer to the withholding of the American application which you have mentioned in your answer to interrogatory 563?

Ans. It does.

Q. 567. About when did Mr. George Brown go to England?

Ans. About the last week in January, 1876.

Q. 568. Did he take with him a specification furnished by you, corresponding to the specification of your patent of March 7, 1876?

Ans. He did.

Q. 569. Please look at the paper now shown you and state whether it is the specification which you furnished to Mr. George Brown.

Ans. It is.

[*Complainants' counsel puts a copy of the paper in evidence to be marked Complainants' Exhibit George Brown Specification.*]

Q. 570. How long before Mr. George Brown sailed for England did you deliver this paper to him?

Ans. I only know that it was handed to him between the date of the argreement, December 29, 1875, and the time he sailed,—the latter part of January, 1876.

Q. 571. When was this paper written?

Ans. In October, 1875.

Q. 572. I observe that it is headed "United States Patent Office," from which I infer that this particular paper was originally prepared for your American specification, and not for the purpose of being handed to Mr. George Brown; what is the fact about that?

Ans. Certainly; that is the fact.

Q. 573. Did you, at or about the time when you handed this paper to Mr. George Brown, also give to him descriptions of your other electrical inventions, patented and unpatented?

Ans. Yes.

Q. 574. Are these six papers, which I now show you, the ones referred to in the last question and answer?

[*Objected to as immaterial and irrelevant.*]

Ans. Yes.

Q. 575. Will you please offer them to the defendants' counsel for his inspection, if he desires to look at them?

Ans. I do so now.

Q. 576. In the Exhibit George Brown Specification there are some alterations made by drawing the pen through words or phrases, and interlining others in place of them. What is your recollection as to when these changes were made?

Ans. I have not any clear recollection of the time when these changes were made, excepting that they were made before the specification was given to Mr. Brown.

Q. 577. In your 563d answer you have several times applied the phrase "electrical researches" to your electrical work. What do you mean by that phrase?

Ans. I was not a skilled electrician and did not perhaps carry on my experiments in the same manner they might have been carried on by one more familiar with electrical subjects. My experiments, therefore, took on very much of the character of research for the sake of information. I have always been accustomed to speak of my experiments as "researches."

Q. 578. I wish you would explain a little more definitely the manner in which you were in the habit of carrying on the electrical work or researches, by which you developed your electrical inventions.

Ans. My general method of research will be understood by considering the mode in which I developed the speaking telephone. It was not my plan to make telephone after telephone slightly differing from one another in detail, but to ponder over the different defects in the operation of the instruments and try to devise some plan for testing the conditions under which better results might be anticipated. For instance, in the development of the speaking telephone it was evidently necessary to understand the conditions under which the most powerful electrical effects would be produced by the vibration of an armature in front of a magnet. For this purpose I did not consider it either necessary or convenient to use the form of apparatus to which the results obtained were to be applied. Indeed, it was very inconvenient and difficult to have a person talking or shouting to a telephone while different modifications were made to test the

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point, and almost impossible to compare the results of different experiments. My method of elucidating the point, was to keep every element in my combination constant except the one whose variation I desired to observe. For this purpose, therefore, I would keep the armature of an instrument in mechanical vibration at a constant rate, and as nearly as possible with constant amplitude, and then try by the variation of the other parts of the apparatus, one by one, to arrive at that combination which would under these circumstances produce the most violent electrical effects. This will account for the fact that so many of the electrical experiments that were made in the attempt to improve the speaking telephone were made with free tuned reeds, vibrating permanent magnets, etc. That combination that would under such constant circumstances of vibration produce the best effects, I believed would be also most suitable in the speaking telephone. This will illustrate, I think, a little more clearly what I meant when I characterized my electrical experiments as "researches."

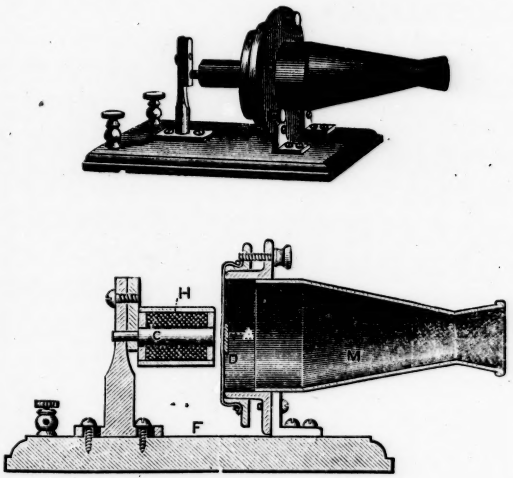
Q. 579. It has appeared that your Centennial instruments, both the single pole and the double pole, had their diaphragm and armature made of a stretched membrane carrying a patch of iron or steel cemented or shellacked to its central portion. What led you to adopt this arrangement, and how did you arrange the diaphragm and armature with reference to each other?

Ans. My recollection is that difficulty was experienced in arranging a suitable attachment between the armature and membrane of the speaking telephone, shown in figure seven of my patent of March 7, 1876, because the attraction of the electro-magnet tended to separate the armature from the membrane. I thought this might be avoided by placing the armature on the *other* side of the membrane, so that the attraction of the electro-magnet should cause it to adhere more firmly to the latter. At first I believe that a double pole electro-magnet was employed, with each pole opposite to one end of the armature, with the intention of polarizing it through the membrane, and I am inclined to think, but am not perfectly sure, that in the early experiments with metallic patches that the armature was ranged upon the membrane so that one extremity was near the center and the other near the circumferance. At all events, it was soon discovered that this was not important. The belief that the most violent vibrations of the membrane were at the center, and that, therefore, the pole of the magnet would be most advantageously placed at or near the center of the diaphragm, and the desire to ascertain how small a piece of metal fastened to the membrane would produce

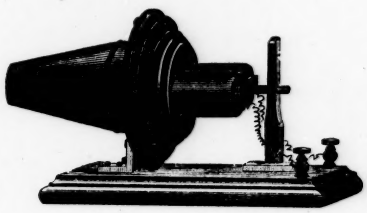
audible effects led me to the construction of what is known as the single pole Centennial membrane telephone; the other I have described above, constituting what is now known as the double pole Centennial membrane telephone.

Q. 580. Will you produce views and drawings of the Centennial instruments now present, and insert them as part of your answer?

Ans. I do so, stating that the *sectional* drawings are carefully made to scale—one fourth of the size of the originals. The *views* are not very accurate; but will serve to give a general idea of the instruments. The membranes of the three membrane instruments are each three inches in diameter. The tube of the iron box magnet receiver is one and three fourths inches diameter.



BELL'S CENTENNIAL SINGLE POLE MEMBRANE TELEPHONE.



BELL'S CENTENNIAL DOUBLE POLE MEMBRANE TELEPHONE.
(*Same size as the single pole telephone.*)

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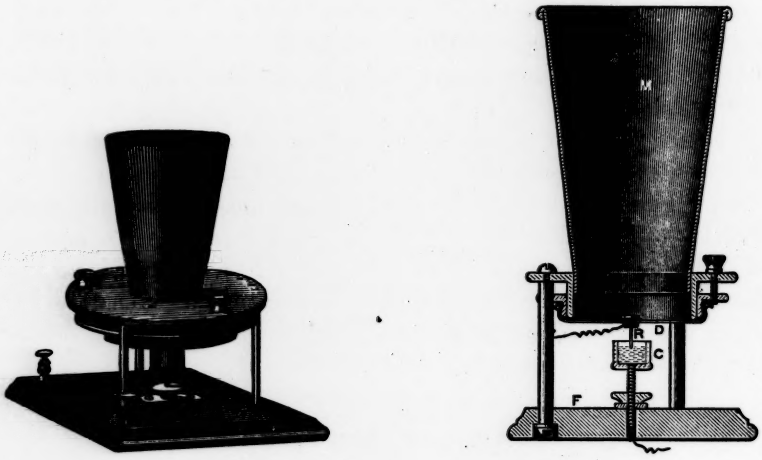
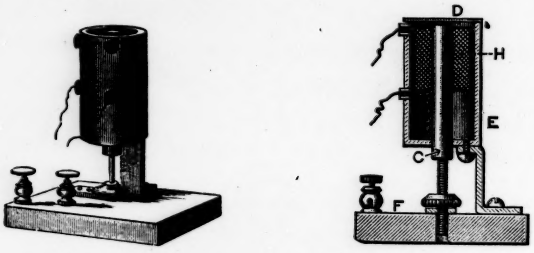


BELL'S CENTENNIAL LIQUID TRANSMITTER.



BELL'S CENTENNIAL IRON BOX MAGNET RECEIVER.

Q. 581. The Centennial iron box magnet receiver as it now exists, and as it is shown in the sectional drawing, has its coil extending over only one half of the length of the core, and holes through the side of the instrument bushed with vulcanite, allowing the wires to come out. Please state if that was the arrangement of coil when the instrument was used at the Centennial, and if not, what was its arrangement?

Ans. No; that was not the arrangement. The holes at the side of the instrument, and the coil that is now in it, were subsequent alterations made in pursuance of my researches. The coil used in the instrument at the Centennial Exhibition extended from end to end of the core, and the terminals were brought out below, through holes that still exist in the instrument.

Q. 582. In Mr. Watson's deposition, page 236, there is printed the Report on Awards, which you said was made by Sir William Thomson,

relating to your electrical exhibit at the Centennial. If you have here the original award, will you please read from it the parts which are not there printed?

Ans. I will do so; the award is headed:

"INTERNATIONAL EXHIBITION,
Philadelphia, 1876.

The United States Centennial Commission has examined the report of the judges, and accepted the following reasons, and decreed an award in conformity therewith:

PHILADELPHIA, *December* 26, 1876."

Then follows the Report on Awards, as printed on page 236, in Mr. Watson's deposition, after which come the official signatures, and the attestation, as follows:

"WILLIAM THOMSON,
Signature of the Judge.

Approval of group judges:

J. E. Hilgard,
James C. Watson,
H. K. Oliver,
F. A. P. Barnard,
J. Schudmayer,
E. Levasseur,
P. F. Kupka,
Ed. Favre Perrett,
Charles E. Emery,
Joseph Henry.

A true copy of the record.

[SEAL.]

FRANCIS A. WALKER,
Chief of the Bureau of Awards.

Given by authority of the United States Centennial Commission.

A. T. GOSHORN,
Director General.

J. R. HAWLEY,
President."

J. L. CAMPBELL, *Secretary.*"

Q. 583. Will you please produce and read to the examiner a letter which you received from President Barnard, of Columbia College, relating to your electrical exhibit at the Centennial?

[*Objected to as irrelevant, and not referred to in the direct examination.*]

Ans. It is as follows:

"INTERNATIONAL EXHIBITION,
1876.

BUREAU OF AWARDS. GROUP.

UNITED STATES CENTENNIAL COMMISSION,
PHILADELPHIA, *August* 10, 1876.

DEAR SIR: As a member of the Board of Judges of the Centennial Exhibition for Group XXV, I have been much interested in a report

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made by Sir William Thomson on your ingenious method of transmitting vocal sounds by telegraph. My engagements were, unfortunately, such as to put it out of my power to attend, in Philadelphia, during the month of June, and I therefore was not present when the examination of your apparatus was made by the committee of the Board.

"I have now in press a book of which the enclosed circular will give you some idea, in the progress of which we have just reached the word 'Telegraph;' and the galley proof of the article on that subject has just reached me. I am exceedingly anxious to add to this article some brief notice of your very remarkable invention; and I write to you in the hope that you may find it convenient to furnish me with a paragraph giving a popular account of it, in time for insertion in its proper place. I might, it is true, make an abstract of Sir Wm. Thomson's still unpublished report, to which I have access; but I would rather the statement should be made by yourself. It will be in season if received within the next ten days; but it is, of course, desirable that as little time should be lost as possible.

May I hope to have the pleasure of hearing from you at your early convenience?

I have left Philadelphia for Saratoga, where I shall remain for a week or two. I stop at a private house. *My address is Saratoga*, simply.

Sincerely Yours,

PROF. A. GRAHAM BELL. F. A. P. BARNARD."

Q. 584. In the deposition of Mr. Elisha Gray, in the Dowd case, I find the following extract from the *New York Tribune* of April 3, 1877, referring to an exhibition given by Mr. Elisha Gray, in New York, on the preceding day:

"After the first part of the programme had been executed, Mr. Elisha Gray came forward and addressed the audience. He was aware that great confusion existed in the popular mind as to what this telephone could perform; in particular, it had been confounded with the speaking telephone invented by Prof. A. Graham Bell, of Boston. Prof. Bell, Mr. Gray said, was present in the audience."

Were you present in the audience on that occasion, and did the incident take place substantially as there stated?

[*Same objection.*]

Ans. I was present, and heard Mr. Gray say substantially what has been quoted.

Adjourned.

MARCH 12, 1883.

Q. 585. You have told me this morning that you wanted to make some addition to your answer to Interrogatory 571; please do so.

Ans. Yes; I desire to state that though from the language used in this paper I know that it is a copy of the specification as I wrote it in

October, 1875, I can not be perfectly certain that the copy was itself made in October, 1875, although it is my belief that it was. It was made as a fair copy, not in my handwriting. The interlineations and corrections are in my handwriting.

Q. 586. I observe that the fifteen sheets of which it is composed are numbered consecutively, and each of them bears at the top the initials "G. B." Are those initials Mr. George Brown's handwriting?

Ans. They are; I saw him write them.

Q. 587. The last sheet, which happens to be the sheet of drawings, contains on the back this indorsement:

"These papers were received by me from Professor Alex. G. Bell in the winter of 1875-6, shortly before I left for England. I can fix the exact date by reference to my books and papers, but have not them at hand now.

"GEO. BROWN.
"Toronto, 12 *November*, 1878."

In whose handwriting is that?

Ans. In the handwriting of Mr. George Brown; I saw him write it.

Q. 588. When you had the interview with Messrs. George and Gordon Brown, the last of September, 1875, did you state to them your inventions of the undulatory current multiple telegraph, and the speaking telephone?

[*Objected to as incompetent.*]

Ans. I don't know. I think not; my impression is, that I explained only those inventions for which letters patent had been applied for in the United States, and that I stated that I would explain the new inventions when some definite arrangement had been concluded between us.

Q. 589. The three Centennial membrane instruments now present are provided with tin cones; did you always use them with the tin cones, or how were you in the habit of using those and similar instruments in that respect during the summer of 1876?

Ans. I was in the habit of using the instruments chiefly without the cones. The cones were placed upon the instruments mainly for the purpose of giving them a finish when sent to the Centennial Exhibition. In laboratory experiments it was my custom to place my mouth or ear close up to the membrane as I could get it, but I thought the cones would be more convenient for the judges.

Q. 590. In the two judges' reports I do not find any reference to cones; do you remember whether you used them when you exhibited the apparatus in operation June 25, 1876?

Ans. I do not remember.

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Q. 591. You have testified on cross-examination that you originally recognized the possibility of using an instrument like Fig. 7, of the March 7, 1876, patent as a means for transmitting and receiving various pitches used in multiple telegraphy, but did not contemplate its employment for that purpose. In your English provisional specification, which you have said was prepared in October or November, 1876, you refer to that use of it as part of the "fourth plan." (Complainants' Exhibits, p. 59.) Had you had any experience in the transmission and recognition of different pitches with a single instrument at each end, between March, 1876, and October, 1876, which modified your views in this respect? If so, please state briefly what it was.

Ans. Yes; I made experiments in Canada with membrane telephones like those used at the Centennial. I had a triple mouthpiece made for one of the instruments, so that three different persons could speak or sing to the same membrane telephone, and upon listening at the receiver I was able to distinguish one voice from another and one pitch from another, even when the three persons at the transmitting end spoke or sang simultaneously.

Q. 592. Was that the experiment or exhibition referred to in an article in the *Scientific American* of September 9, 1876, quoted in Mr. Watson's deposition at the top of page 243?

Ans. Yes.

Q. 593. You have stated that you thought that the draught of the English provisional specification was used to assist in the preparation of the specification of the United States patent of January 30, 1877; have you compared various portions of the United States specification with the corresponding portions of the Fourth Plan of the English provisional specification enough to satisfy yourself, from the identity of the language employed, that some portions of the later paper must have been copied from the earlier one?

Ans. I have.

Q. 594. The English provisional specification contains six "plans" or parts, and it is the fourth "plan" which contains the matter corresponding to the United States patent of January 30, 1877, and shows the telephone with the metallic diaphragm; is that the fact?

Ans. It is.

Q. 595. The "fourth plan" of the English provisional specification also shows, first of all, a membrane instrument exactly like the instru-

ment of Fig. 7 of the patent of March 7, 1876, with the exception of the shape of one of the cones, does it not?

Ans. It does.

Q. 596. It then proceeds to describe the metallic diaphragm instrument, introducing the description of it by the following language:

"Instead of the cone, membrane, and armature shown in Fig. 19, a plate of thin steel may be used; the vibration of the plate in front of the magnet, occasioned by the motion of the air during the production of sound, changes the intensity of the current as hereinbefore described, and occasions a similar motion in a similar steel plate in front of another electro-magnet at another station in the circuit."

Is that the fact?

Ans. The specification so states.

Q. 597. As this specification introduced at the English Patent Office for the first time the apparatus, Fig. 7, of your March 7, 1876, patent, in its original form there shown, and also introduced the improved form reached by the substitution of the metallic diaphragm, as set forth in your second United States Patent, I suppose that it was proper to state therein the novelty which attached to the first production of the instrument in its original form, as well as that attached to its additional improvements, was it not?

[*Objected to as incompetent and leading; and the production of the completed English specification is again called for.*

Complainants' counsel says that the English patent is a public document, accessible to everybody; that it appears to him to be immaterial in fact as well as in law, and that he sees no reason for encumbering the record with it.

Respondents' counsel states that the provisional specification is only a part of it, and refers to only a portion of the drawings, and does not contain the claims; and if it is material to have any part of the patent, it is material to have the whole.]

Ans. Certainly.

Q. 598. As your second United States Patent, that of January 30, 1877, had been preceded by the first patent, that of March 7, 1876, I suppose it was not proper to state therein as a novelty that which had already been published to the community by the first patent, was it?

[*Objected to as incompetent, leading, argumentative and assuming.*]

Ans. Certainly not.

Q. 599. Will you now compare that portion of the United States Patent of January 30, 1877, which states the use of the instrument therein described for the purpose of transmitting articulate speech, with that part

of the "Fourth Plan" of the English provisional specification, which describes the use of the instruments of that plan for the purpose of transmitting articulate speech; and do it in such a manner as to exhibit whatever verbal difference or identity may exist between them?

[*Objected to as incompetent and immaterial.*]

Ans. I think that these portions of the specifications will be best compared by printing them in parallel columns, and I therefore arrange them so.

ENGLISH PROVISIONAL SPECIFICATION.	U. S. PATENT OF JANUARY 30, 1877.
Whatever sound is made	Whatever sound is made
in the neighborhood	in the neighborhood
of any telephone,	of any telephone,
say T. e., Figure 21,	say at J., Fig. 4,
is echoed in *fac-simile*	is echoed in *fac-simile*
by the telephones, T. e.,	by the telephones
of all the other stations,	of all the other stations
	upon the circuit,
hence this fourth plan	hence this plan
is also adapted for the	is also adapted for the
entirely new	
use of transmitting	use of the transmitting
intelligibly the exact sounds	intelligibly the exact sounds
of articulate speech.	of articulate speech.
To convey an articulate	To convey an articulate
message it is only necessary	message it is only necessary
for the operator to speak	for an operator to speak
in the neighborhood of a	in the neighborhood of his
telephone, say T. e., Figure 21,	telephone,
	preferably through the tube E,
and for the receiving	and for another
operator at another	operator at a distant
instrument, say T. e., fig. 23,	station upon the same circuit
to listen.	to listen to the telephone at that station.
If two persons speak	If two persons speak
simultaneously in the	simultaneously in the
neighborhood of the same	neighborhood of the same
or different telephones,	or different telephones,
the utterances of the two	the utterances of the two
speakers are reproduced	speakers are reproduced

simultaneously by all the other telephones on the same circuit, hence, by this plan,

vocal messages may be transmitted simultaneously over the same circuit in the same or opposite directions, with one battery for the whole circuit, and one telephone at each station on the line. In this plan of transmitting vocal utterance it is only necessary that the strength of the current should vary in intensity as the air varies in density during the utterance of the sound.

simultaneously by all the other telephones on the same circuit; hence, by this plan, a number of vocal messages may be transmitted simultaneously on the same circuit in either or both directions.

Q. 600. It is apparent from comparing the two passages thus printed that the one was copied from the other, with certain omissions, and the alteration of a few words or expressions, some of which are evidently mere verbal or clerical changes. If there are any which appear to you to have any significance, will you please to point them out?

[*Same objection.*]

Ans. The most material difference seems to me to lie in the fact that whereas in the English provisional specification the use of the telephones, for the purpose of transmitting intelligibly the exact sounds of articulate speech, is characterized as "entirely new," these words were left out when the passage was copied into the American patent.

There is another difference that appears to me to have some signification, namely: That the paragraph describing the nature of the electrical variations necessary in order to transmit vocal utterance, was also left out.

[*Complainants introduce in evidence the whole of the deposition of Mr. G. G. Hubbard, in the Dowd case, extracts from which are found in the cross-question* 487, *cross-question* 489, *and cross-question* 517, *supra.*

[*Objected to as incompetent.*]

Q. 601. It appears that you began to write letters to Mr. Hubbard for the purpose of being records of your work; how long did you persevere in that?

Ans. I think about ten days or a fortnight.

Q. 602. The letter of November 26, 1874, from you to Mr. Hubbard (referred to in your answer to cross-question 196, page 177) was the first of those, was it not?

Ans. It was.

[*At the suggestion of defendants' counsel the complainants' counsel states that he thinks that he has had either three or four of those letters; that they refer to electrical experiments relating to the production of the sensation of sound by electricity, but so far as he recollects, contain no reference to the speaking telephone, nor to the undulatory current multiple telegraph. The first two letters are now present, dated November* 26, 1874, *and November* 27, 1874.

Several letters written by Mr. Bell in the winter of 1874–5 *are produced and inspected by defendants' counsel, and, at the request of defendants' counsel, copies of the following are put in evidence:*

1. *A letter to Dr. C. J. Blake, dated Salem, December* 15, 1874.

2. *A letter from Mr. Bell to his father, Prof. A. M. Bell, dated Boston, February* 12, 1875.

3. *A letter from Mr. Bell to his father, dated "on the train between Boston and Salem," March* 5, 1875. *The sheets of this letter contain also a copy of an agreement between A. G. Bell, Thomas Sanders, and G. G. Hubbard, dated February* 27, 1875.]

Q. 603. You stated that you made an oral agreement with Messrs. Sanders and Hubbard in the fall of 1874, and you have now produced a copy of a written agreement made February 27, 1875; is it your recollection that you and they first rested upon an oral agreement, and afterwards reduced it to writing?

Ans. Yes; that is my recollection.

Q. 604. You have been examined with reference to the dates of those visits to Washington and New York in the early part of 1875, which are referred to in your letter to your father of March 18, 1875, (p. 125;) please refresh your recollection by looking at the letters to your father of February 12 and March 5, 1875, as produced, and also at the date when you signed the application for your patent of April 6, 1875, No. 161,739, and state whether you can by their aid fix the date of those visits more accurately.

Ans. The first letter was written from Boston, February 12, 1875, and I left for Washington within a few days after. The names of the witnesses to the specification referred to show me that it was executed in Washington on the 2d of March, and my letter of March 5th to my father

and mother was written in the cars between Salem and Boston, immediately after my return from Washington, and before the second visit to New York, when I made the exhibition at the Western Union office, referred to in my letter of March 18th.

The letter of February 12 is written on the back of one of my circulars, announcing the proposed arrangement of my classes for the spring session of 1875, and from this circular I find that my classes were to have commenced on the 1st, 2d, and 3d of March. It was to these classes I referred in my letter of March 18, 1875, when I stated "I have put off all pupils and classes until the 12th of April."

[*A sheet of brown wrapping paper is produced, headed "Experiments made June 30th, 1875," containing memoranda of eleven experiments. They all refer to experiments made with magneto currents generated by the vibration of tuned reeds and of vibrating permanent magnets. It is marked "Bell's memorandum of experiments of June 30th, 1875," and a copy of it is put in evidence at the request of defendants' counsel.*]

Q. 605. Will you look at the paragraph of your first patent, March 7, 1876, which begins: "The advantages I claim to derive from the use of an undulatory current in place of an intermittent one, are", and then enumerates five advantages; and state, whether, according to your opinion and belief at the time, those advantages ensued from the employment of a current which was undulatory instead of intermittent, regardless of the form of the undulations, or whether the attainment of those advantages required the production of some special form of electrical undulations as distinguished from other forms of electrical undulations?

[*Objected to as incompetent.*]

Ans. I believed at the time that the advantages enumerated ensued from the employment of a current which was undulatory instead of intermittent, quite regardless of the form of the undulations.

(*Witness produces copies of the preliminary statement in the Harmonic Multiple Telegraph Interference, dated April 27, 1876, and sworn to May 8, 1876; and of his preliminary statement in the telephone interferences, sworn to November 20, 1878, and they are put in evidence at the request of respondents' counsel.*)

Q. 606. Please state where, and under what circumstances, your preliminary statement in the Telephone Interferences was prepared.

Ans. It was prepared in the Massachusetts General Hospital, where I was at the time under surgical treatment. I had just returned from

Europe, where I had been since August, 1877. Upon landing in Quebec somewhere about November 10, 1878, I was met by Mr. Watson who had been sent to Quebec to bring me to Boston. I was at the time suffering from a difficulty requiring surgical interference, and upon my arrival in Boston I was taken at once to the Massachusetts General Hospital, where an operation was performed. I understood that it was necessary that my preliminary statement in the Telephone Interference should be prepared at once, as an early date had been set, beyond which it could not be filed. My preliminary statement, therefore, gives my recollection of the subjects described in it before my recollection had been refreshed by the perusal of papers and memoranda that had not then been gathered together.

Q. 607. Please look at the reproduced instruments, marked Complainants' Exhibits 49, 50, 51, and 52, and state whether they correctly represent some of the forms of the membrane instruments which you had in June and July, 1875, and which are referred to in your answers to cross-questions 296–316, inclusive, (pp. 1578–1588.)

Ans. They do.

(*The six papers referred to in answer to Interrogatory* 574, *each of which is indorsed upon the back "G. B.* 12 *November*, 1878," *in the handwriting of Mr. George Brown, are put in evidence by respondents and marked Gordon-Brown specifications, I, II, III, IV, VI.*)

(Adjourned.)

MARCH 13.

Cross-examination resumed.

Cross-Q. 608. Please explain exactly what you mean by the expression "electrical diagrams," which expression you have used several times in your testimony.

[*Objected to as matter not gone into in the direct examination.*]

Ans. A diagram that would illustrate the general electrical arrangements described in the specification, and that did not profess to be exact drawings of the apparatus, or even to show many of the mechanical details of construction.

Cross-Q. 609. Assuming a multiple telegraph line equipped as shown in Fig. 6 of your patent of March 7, 1876, the transmitting operator at instrument A could send to the receiving operators at instruments A^1 A^2 which are tuned to the same pitch with A, a set of signals at that pitch by electrical undulations which might be represented, say by the curve

A in Fig. 4, while at the same time the transmitting operator at instrument B could send through the same line to the receiving operators at instruments B^1 B^2 which are tuned to the same pitch with B, a set of signals at the latter pitch by electrical undulations which might be represented, say by the curve B in Fig. 4; am I correct?

[*Objected to as ambiguous.*]

Ans. The electrical undulations produced by the operations of the instruments A and B might be represented by the curves shown at A and B in Fig 4, if the armatures produced simple sinusoidal vibrations. The form of the curves representing each set of undulations is not material for the purposes of multiple telegraphy.

Cross-Q. 610. In such case the two sets of undulations imposed upon the line simultaneously would assume the resultant form of the curve A+B, Fig. 4, and traverse the line in that form; would they not?

Ans. Yes; if each set of undulations were to be correctly represented by the sinusoidal curves A and B, then the resultant undulations on the line might be represented by the curve A + B, Fig. 4.

Cross-Q. 611. If I understand you correctly, the curves A + B, Fig. 4, represent simple sinusoidal vibrations or undulations, do they not?

Ans. Yes.

Cross-Q. 612. In case that two such undulations were traversing the line similtaneously in the form of the resultant curve A + B, Fig. 4, then the receiving instruments A^1 A^2, B^1 B^2, would analyze the resultant curve or undulation into its constituent undulations, the receivers A^1 A^2 making the undulation A audible, and the receivers B^1 B^2 making the undulation B audible; am I right?

Ans. If by that you mean that the form of the vibration of each receiving reed would be represented by A or B, Fig. 4, you are not necessarily right; but if you mean that the frequency of the vibration of each receiving reed would correspond to the frequency of the vibration represented by the curves A or B, then you are right. The receivers A^1 and A^2 would produce sounds of the same frequency or pitch as that produced by A, and the receivers B^1, B^2, would produce sounds of the same pitch as that produced by B, and in this sense they would make the undulations of A and B audible.

Cross-Q. 613. You have stated that the structure shown in Fig. 5 of said patent is not adapted for an apparatus intended to transmit and reproduce *timbre*, but that the structure shown in Fig. 7 is adapted for such an apparatus, and in answer 542 you have given your reason for this, to wit:

That a free tuned reed like that shown in Fig. 5 has a strong tendency to vibrate after a law of its own, and it is difficult to make it move at any other rate, or in any other manner than that which is normal to it; but the mechanical structure of the apparatus shown in Fig. 7 adapts it to vibrate with substantially equal freedom at all rates and in any manner, so that it can copy the shape or the form of any vibration. If the membrane shown in Fig. 7 be attached at its center to the free end of a tuned spring reed, like that shown in Fig. 5, will it then vibrate with substantially equal freedom at all rates and in any manner, so as to copy the shape or the form of any vibration?

Ans. It would depend a good deal upon the relation between the membrane and tuned reed. Each element of the combination would retain the tendencies described above, and it would depend upon the mass and stiffness of the tuned reed as compared with the membrane, as to which set of tendencies would predominate.

Cross-Q. 614. Please explain what the relation should be in such case to adapt the combined membrane and tuned spring reed to vibrate with substantially equal freedom at all rates and in any manner, so as to copy the shape or the form of any vibration?

[*Objected to as new matter.*]

Ans. There should be as much membrane and as little tuned reed as possible.

Cross-Q. 615. Then a membrane a yard wide with a reed half an inch long would answer the purpose admirably; and if this be not so, please explain more definitely what you mean?

[*Same objection.*]

Ans. I did not refer to actual size but to the mass and stiffness of the tuned reed as compared with the membrane. The less mass and less stiffness the tuned reed has, as compared with the membrane, the more nearly will the combination approach to the conditions of a membrane without any reed attached to it, and hence the more perfectly will the combination be adapted to vibrate at all rates and in any manner, so as to be suitable for the purpose of reproducing *timbre.* Conversely, the greater the mass and the greater the stiffness of the tuned reed as compared with the membrane, the more nearly will the combination approach to the condition of a *free* tuned reed without any membrane attached, and the more perfectly will it be adapted to vibrate at one rate alone.

Cross-Q. 616. But my question referred to the reed shown in Fig. 5,

and the membrane shown in Fig. 7 of said patent, mentioned in your ans. 542; and I want to know how *that* reed and *that* membrane would operate in combination as I have indicated, and whether *that* combination would copy the shape and form of any vibration?

[*Same objection.*]

Ans. I must say I cannot follow your question, for I have already specifically stated that these drawings are mere electrical diagrams, and do not profess to show the mechanical relation between the parts specified; and upon this mechanical relation, as I have stated above, the result of the combination depends.

Cross-Q. 617. Then if such combination be made with the parts properly proportioned to each other, it will do what either instrument shown in Fig. 7 will do, and if said parts are not so properly proportioned it will not do what said instrument shown in Fig. 7 will do. Is that the fact?

[*Same objection.*]

Ans. In the former case it may do substantially what Fig. 7 will do, but not so perfectly. In the latter case it may do approximately what Fig. 7 will do, and this approximation will be greater or less accordingly as the tuned reed has greater or less mass and stiffness as compared with the membrane. By the expression "parts properly proportioned" I understand that the mass and stiffness of the tuned reed is so slight as compared with the membrane that substantially and for all practical purposes it is not a tuned reed at all.

Cross-Q. 618. Assuming it to be a tuned reed to the extent that at least it vibrates according to a law of its own when its vibrating end is entirely free, and that such tuned reed, as shown in Fig. 5, be combined with the diaphragm shown in Fig. 7, then please answer my last question.

[*Same objection.*]

Ans. For the purpose of reproducing *timbre* we want a combination that will vibrate as little as possible after a law of its own, and as much as possible after the law of the vibrations impressed upon it, so that substantially it has no tendency to vibrate after a law of its own, but will copy with substantial fidelity the form of the vibrations impressed upon it. Now, when a free tuned reed is combined with a diaphragm so that the reed is enabled to vibrate with substantial freedom at all rates it is substantially no longer a tuned reed. This condition

cannot theoretically be arrived at, but practically by so arranging the elements of the combination that the mass and stiffness of the reed is insignificant compared with the membrane, the conditions may be approximately fulfilled.

Cross-Q. 619. In the spring of 1876, from March 7 till June 25, were you engaged in your professional work?

[*Objected to as new matter.*]

Ans. Yes.

Cross-Q. 620. What, if any, change took place in your pecuniary circumstances about March 7, 1876, that enabled you after that date to go on with your electrical experiments as well as your professional work?

Ans. There was not much improvement in my pecuniary circumstances, excepting that I was enabled by economy to support myself by the fees received from the members of my normal class, and the time occupied was of course much less than if the same amount had been gained by the instruction of individual pupils.

Cross-Q. 621. On the papers which you gave to George Brown preparatory to his going to England I find indorsed the words "November 12, 1878." How happened that?

Ans. I had just returned from Europe at that time, and understanding from Mr. Watson, who met me at Quebec, that interferences were arising in the Patent Office, I thought it might be important to obtain from Mr. Brown whatever papers he might have. We, therefore, called on Mr. Brown in Toronto on the 12th of November, and at my request Mr. Brown indorsed the papers and gave them to Mr. Watson.

Cross-Q. 622. Is Mr. Brown living; and if not, when did he die?

Ans. Mr. George Brown was assassinated a year or two ago; but I do not know the exact date of his death.

Cross-Q. 623. Have you produced here all the papers which you and Mr. Watson obtained from Mr. Brown?

Ans. I believe so.

Cross-Q. 624. Referring to your English patent; the completed patent contained other drawings and descriptive matter than that contained in the provisional specification which has been put in evidence; did it not?

[*Objected to as new matter, not opened upon any examination, as immaterial, and as calling for secondary and incompetent evidence.*

Respondents' counsel says that he called for the completed patent, and ex-

pected that complainants' counsel would put it in evidence in his redirect examination; but he declined so to do.

Complainants' counsel says that it is not a paper which belongs to the complainants, or which, in fact, or even presumably, is in possession of complainants or their counsel or the witness, and that neither of them has any means of obtaining it or copies of it, other than those which the whole community has.

Respondents' counsel says that complainants' counsel has apparently found no difficulty in finding and putting in a copy of so much as suited him, and he is called upon only to complete the record.

Complainants' counsel says that he has put in evidence a paper prepared and filed in 1876, *in the manner stated; that he has not put in evidence a paper filed in* 1877 *in the English Patent Office, because he conceives it to be wholly immaterial both in fact and in law, and that it would be simply an encumbrance of the record.*]

Ans. I believe so, as I remember the specification.

Cross-Q. 625. It contained drawings substantially the same as Figs. 1 and 2 of your United States patent, dated January 30, 1877, did it not?

[*Same objection.*]

Ans. I suppose so but cannot remember without reference to the specification; what do you mean by "substantially similar?" As I understand it, instruments substantially similar to these are shown in the provisional specification.

Cross-Q. 626. It contained claims substantially similar to the claims of your United States patent dated January 30, 1877, did it not?

[*Same objection.*]

Ans. My recollection is that it contained all the claims of all my United States patents, but I cannot be perfectly sure.

Cross-Q. 627. Have you that English patent here in the house or a copy of it?

Ans. Yes; I have a copy of it upstairs.

Cross-Q. 628. I will accept a copy of it instead of the original, and will therefore ask you if you are willing to put it in evidence?

Ans. I will show the copy to counsel, but will not put it in evidence.

NOTE.— *Witness produces the ordinary official copy printed by the British Patent Office and hands it to defendants' counsel.*

Cross-Q. 629. The sectional drawing of your Centennial instruments which have been put in evidence, pp. 1685 and 1686, do not show the

means for adjusting the poles of the electro-magnets towards and from the armatures. If they do, please explain how the means are shown.

Ans. The standard that carries the electro-magnet has a slot in the base so that it can be moved towards and from the membrane and clamped by screws passing into the base-board. One end of the core of the electro-magnet passes through a hole in the supporting standard; this also appears in the drawing. A set screw is provided which clamps this core wherever it may be placed. This set screw is not shown in the drawing.

Cross-Q. 630. In operating those instruments at the Centennial you had considerable difficulty in getting them adjusted, or keeping them adjusted so as to get words through them; had you not?

Ans. I do not remember precisely, but do not think so. My recollection is that they were adjusted before the experiments commenced and were not touched afterwards.

Cross-Q. 631. Those who listened at them during that Centennial experiment of June 26th, failed to hear a good deal that was said through them, did they not?

Ans. I do not know; I was not present at the receiving end; I never heard so.

Cross-Q. 632. I suppose you compared notes at the time with those who were at the receiving end, did you not?

Ans. No; they were nearly all strangers to me. I asked some one, I think Mr. William Hubbard, to go to the receiving end and let me know whether the listeners seemed to be hearing anything. The impression I received from his reply was that they were hearing very well and were repeating to the audience what they heard, and that the audience were cheering or clapping hands. While I was speaking to one of the instruments, Sir William Thomson came to observe what I was doing, and spoke of having understood from the receiving instrument a portion of Hamlet's Soliloquy upon Death, which I had just finished reciting.

Cross-Q. 633. Did you recite the whole of the Soliloquy into the instrument?

Ans. I believe so, but Sir William did not listen to it all. Each listener would hold the instrument to his ear for only a short time and then hand it to some one else.

Cross-Q. 634. What instruments did you test on that day at that public exhibition?

Ans. The single and double pole membrane telephones; the Centennial iron-box magnet receiver, and some multiple telegraph apparatus.

ALEXANDER GRAHAM BELL.

Attest:

CHAS. H. SWAN,
Examiner.

Deposition of Alexander Melville Bell.

WASHINGTON, *March* 1, 1883.

Direct examination by J. J. Storrow, Esq., of counsel for complainants.

Q. 1. State your name, age, residence, and occupation, and are you the father of Mr. Alexander Graham Bell?

Ans. Alexander Melville Bell; I am sixty-four years old; I live in Georgetown, D. C.; I have no occupation at present; my last occupation was that of Professor of Speech in Kingston University; I am the father of Mr. Alexander Graham Bell.

Q. 2. Did you live in Canada in the year 1874 and 1875?

Ans. I did.

Q. 3. It has appeared that Mr. A. G. Bell lived in Boston and Salem during those years, and from time to time visited you in Canada. If you have a diary, which gives the dates of those visits, will you please produce it and read from it all the memoranda referring to him made during the time of each visit?

Ans. He made a visit to me in the summer of 1874; the entries about it in my diary are as follows:

"Saturday, July 11, 1874,
Aleck home.

Tuesday, July 14, 1874,
Aleck off to Bellville.

Tuesday, July 21, 1874,
Aleck home.

Sunday, July 26, 1874,
New Motor (hopeful.)
Electric speech (?)

Monday, September 7, 1874,
Aleck in tantrums,
Full of new schemes.

Monday, September 28, 1874,
Aleck left."

He made me another visit at Christmas, 1874. The entries in the diary about it are as follows:

"Friday, December 25, 1874,
Aleck arrived (aft.)
Saturday, December 26, 1874,
E. I. and L. dined with D,
Al's experiments described.
Sunday, December 27, 1874.
Long talk on multipl teleg and speech trans. Al sanguine.
Tuesday, December 29, 1874,
Talking half the night motor and telephone.
Saturday, January 2, 1875,
Al left night."

He made me another visit in the early fall of 1875. The entries about it in my diary are as follows:

"Saturday, September 4, 1875,
Aleck arrived.
Thursday, September 9, 1875,
Al hired horse.
Friday, September 10, 1875,
Al riding.
Saturday, September 11, 1875.
Al home.
Sunday, September 12, 1875.
Telephone talk—wonderful
Electro-hydraulic scheme.
Tuesday, September 21, 1875.
Al's teleg illust.
Dom. off.
Monday, September 27, 1875.
Aleck left.

He made me another visit Christmas, 1875. The entries in my diary are as follows:

Saturday, December 25, 1875.
Aleck arrived.
Tuesday, December 28, 1875.
Aleck to Toronto.
Wednesday, December 29, 1875.
Aleck home, agreement,
with G. & J. G. Brown.

Thursday, December 30, 1875.

Aleck left.

Q. 4. Were those entries made at or about the time of the respective dates given?

Ans. They were.

Q. 5. Referring to the visit which he made you in September, 1874, did he at that time have with him and use, or experiment with, animal membranes or the drum of any ear?

Ans. He made such experiments at my house, and to the best of my belief during that visit, but my recollection is too indefinite to be positive.

Q. 6. Did he during that visit say anything to you about having devised a method for the transmission of speech; and if so, state what you recollect about it?

Ans. The entry in the diary shows me that he did, for I had long been familiar with his theory on the subject, and I only noted the fact after he had informed me of his practical plans.

Q. 7. Did he at that visit explain to you his plans and aid his explanations by any diagrams; and if so, state what you recollect of those explanations and diagrams?

[*Objected to as leading, and contents of the diagrams objected to as secondary.*]

Ans. I only recollect the fact that he made copious explanations and endeavored by diagrams to make me understand his *modus operandi*, but I can't recall the details.

Q. 8. Have you got those diagrams in your possession, or do you know where they are?

Ans. They were not preserved; they went into the waste-paper basket.

Q. 9. I infer from the entries in your diary that at his subsequent visits referred to, he talked with you of the transmission of speech and of the telephone; what is the fact about that, and did he talk about it much or little?

Ans. My chief difficulty in remembering what took place at any one visit arises from the fact that he was constantly talking about the telephone, and that he talked of little else.

Cross-examination by L. Hill, Esq., of counsel for respondents.

Cross-Q. 10. You gave a deposition in the case of Bell Telephone Co. *et al. vs.* Peter A. Dowd, in 1879, did you not?

Ans. I did.

Cross-Q. 11. That deposition was as follows, was it not?

DEPOSITION OF A. M. BELL IN THE DOWD CASE, GIVEN AT BOSTON, JULY 12, 1879.

"*Int.* 1. Please state your name, age, and residence, and whether you are related to Professor A. G. Bell?

Ans. My name is Alexander Melville Bell; my age is sixty; my residence in the township of Brantford, Ontario, and Professor A. G. Bell is my son.

Int. 2. Please look at the original of the letter of March 18, 1875, referred to in Mr. A. G. Bell's fifty seventh answer; at the original of the letter of May 24, 1875, referred to in Mr. A. G. Bell's sixty-seventh answer. State in whose handwriting they are; whether you received them on or about their respective dates, and in whose possession they have remained since you received them?

Ans. The letters shown me, dated Salem, March 18, and May 24, 1875, are in my son's handwriting; they were received by me in due course of post, and have been in my custody until November 13, 1878, or thereabouts.

Int 3. While your son was at your house in the summer of 1874, did he say anything to you about any plans he had for the transmission of articulate speech by electricity?

Ans. He did.

Int. 4. Please state when it was, what he said to you, so far as you recollect, and if you have any memorandum of that conversation made at the time, please produce it and read it as part of your answer.

Ans. On July 26, 1874, he explained to me with more detail than I could follow, and illustrated by diagrams, certain plans for the electric transmission of speech. I fix the date and fact of this illustrated conversation by a note in my diary on Sunday, July 26th, containing simply the words: "New Motor, (hopeful.) Electric speech, (?)"

Int. 5. Please state whether during his visit at your house in the summer of 1875, he said anything to you about the transmission of articulate speech by electricity. If yea, state what you recollect of what he said, and if you have any memorandum of that conversation made at the time, please read it as part of your answer.

Ans. On the 12th of September, 1875, I had noted in my diary, "Telephone talk; wonderful;" but I have no recollection of the details of the conversation. The record undoubtedly refers to what I have been told as accomplished facts. This conversation was held with my son on that day.

Ans. It was.

Attest: ALEX. MELVILLE BELL.

CHAS. H. SWAN,
Examiner.

BOSTON, *May* 9, 1883.

Present, J. J. Storrow, Esq., of counsel for complainants; L. Hill, Esq., of counsel for defendants.

Second deposition of Charles R. Cross:

Q. 1. What is your name, and have you already testified in this case?

Ans. My name is Charles R. Cross, and I have already testified in this case.

Q. 2. Have you read the deposition of Mr. Park Benjamin, who was called by the defendants as an expert, and whose deposition is on page 1179 of the defendants' record? If so, please state whether you find therein anything which leads you to modify the opinions you have already expressed in your deposition in this case.

Ans. I have read the deposition referred to, but I do not find anything in it which leads me to modify the opinions which I expressed in my previous deposition in this case.

Q. 3. Will you please state, as briefly as you can, the principal scientific facts which you find set forth, and correctly set forth in Mr. Bell's patent, No. 174,465, of March 7, 1876, with reference to the apparatus shown in Fig. 7, and its operation, and which bear upon the question whether the patent, so far as that apparatus is concerned, is a patent for an electrical speaking telephone?

Ans. The speaking telephone is shown in Fig. 7 of the patent. In the body of the specification and in the claim the patentee describes the nature of the operation which will take place when a sound is uttered into the transmitter by the human voice. I know, as a matter of scientific knowledge, that when spoken to, this is the kind of operation which it theoretically will perform, and the only kind of operation which it theoretically can perform.

The patentee then asserts the consequence of that operation with that apparatus to be that "a similar sound to that uttered into the transmitter is then heard to proceed from the receiver." This action is theoretically the necessary consequence of this operation of the apparatus. I know from actual trial that this operation would be so well performed by a set of instruments constructed according to the instructions of the patent, and without further invention, that the listener at the receiving end will recognize and understand words spoken at the transmitting end.

That feature to which the most prominence is given in the specification is the similarity of form between the sound vibrations which actuate the instrument and the electrical undulations due to them. This is expressly

mentioned in the following sentences of the specification: "These undulations are similar in form to the air vibrations caused by the sound, that is, they are represented graphically by similar curves."

This is the only feature specifically mentioned in the claim, which reads as follows: "5. The method of and apparatus for transmitting vocal or other sounds telegraphically, as herein described, by causing electrical undulations similar in form to the vibrations of the air accompanying the said vocal or other sounds substantially as set forth."

This feature secures the transmission of quality. It has no purpose, function or effect, except the transmission of quality, which includes articulate speech. This correspondence of form is the essential electrical novelty which distinguishes this apparatus from all others known to the community before it.

NOTE.—*On Wednesday, November* 15, 1882, *at No.* 40 *State street, Boston, certain membrane telephone instruments, to wit: Nos.* 49, 50, 51, 52, 53, 54, 55, *and* 56 *were tried in the presence of the examiner; there being present Mr. L. Hill, Mr. Park Benjamin, Mr. Chauncey Smith, Mr. Storrow, Mr. Cross, and Mr. Jacques; also, at the transmitting end of the line, Mr. Rydall, a short-hand writer, and at the receiving end of the line, Mr. Yerrinton, a short-hand writer.*

Counsel for complainants now puts in evidence Mr. Rydall's short-hand notes and Mr. Yerrinton's short-hand notes. The instruments referred to are also put in evidence.

Q. 4. Were you present during all of the tests above referred to, and did you listen at the various membrane receivers during a portion of those tests?

Ans. I was present during the whole of the tests, and listened at the membrane receivers throughout a considerable portion of them.

Q. 5. I have asked you to write down the situations of the two rooms and the general arrangement of the circuits, and also to arrange in parallel columns the notes taken by Mr. Rydall in the transmitting-room of the words spoken into the transmitters, and the notes taken by Mr. Yerrinton in the receiving-room, of the words announced by the listeners as heard by them at the receivers, putting in in their appropriate places, drawings of the different instruments used. Will you please produce and read as a part of your answer the paper so prepared?

Ans. I produce it, and it is as follows:

TRIAL OF MEMBRANE TELEPHONES NOS. 49, 50, 51, 52, 53, 54, 55, AND 56, AT 40 STATE STREET, BOSTON, WEDNESDAY, NOV. 15, 1882.

The transmitters were placed in room 44, the receivers in room 37 of the same building; the two rooms were on different stories and separated by a court-yard fifty feet or more wide. The instruments to be tested were arranged with a metallic circuit. There was also another tell-tale circuit connecting the two stations in which ordinary hand telephones and keys were inserted, to be used to call attention, and for the purpose of repeating back or communicating, in addition to the use made of the instruments under test. At the transmitting-room, No. 44, there were present L. Hill, Esq., counsel for the defendants; Mr. J. J. Storrow, counsel for the plaintiffs, Mr. W. W. Jacques and Mr. Benjamin came into the room before beginning to speak into the instruments, examined them, and caused the small cone instruments to be taken apart, the cores and electro-magnets taken off and replaced. While the instruments were being tested Mr. Jacques spoke into the transmitter. The newspaper sentences spoken were selected by Mr. Hill and read by him to Mr. Jacques, who repeated them into the transmitter. Mr. Hill was invited to speak into the transmitter, also, if he desired, but said that he did not care to. Mr. Storrow held the tell-tale instrument in his hand and listened, and spoke through that. In the following report the words spoken into the instrument are placed under the name of Mr. Jacques.

Mr. Rydall, short-hand writer, in the transmitting-room, took down what Mr. Jacques spoke into the transmitter.

The listener at the receiver repeated what he heard, or made explanatory remarks, taken down by Mr. Yerrinton, short-hand writer.

In the receiving-room there were Mr. Chauncey Smith, complainants' counsel; Prof. Cross, expert on behalf of complainants; Mr. Park Benjamin, expert on behalf of defendants.

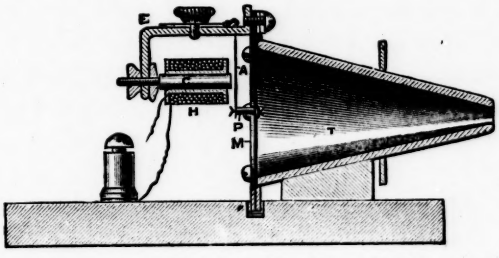


EXHIBIT 53.—Membrane Telephone Receiver. Section, one half size.

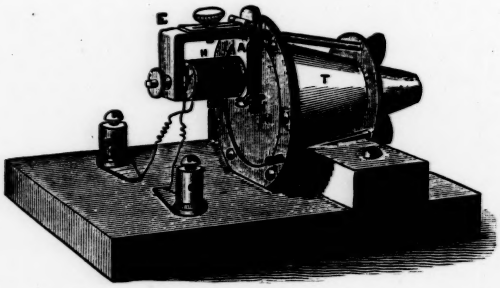


EXHIBIT 53.—Membrane Telephone Receiver. View, one half size.

[NOTE.—*The transmitter No.* 54 *is identical with the foregoing except that the cone T flares out from the diaphragm, as in exhibit No.* 56, infra. *For dimensions see Prof. Cross' answer* 7, infra.]

Transmitting-room.	*Receiving-room.*
Instrument No. 54, 4 cells of Bunsen battery.	Instrument, No. 53.
Mr. Jacques:	*Prof. Cross, listening:*
Now I am ready. I am speaking into one of the cone instruments—do you understand this—hello—it is a pleasant day outside.	
Hallo, do you hear this—can you adjust by this—can you adjust by this—is this loud enough to adjust—is this loud enough to adjust—is this loud enough to adjust—is this loud enough for you to adjust—hallo.	
	(*The report in the receiving-room begins here.*)
Hallo—the sun is shining brightly outside—the sun is shining brightly outside.	Hallo—the sun is shining brightly outside.
I see a stone building—I see a stone building.	I see a stone building.
There are many telegraph wires in view—there are many telegraph wires in view.	There are many telegraph wires in view,—I got it the first time, but was not sure about the "in view" till he repeated it.

The wires are fixed to glass insulators—the wires are fixed to glass insulators.

The wires are fixed to glass insulators.

There are also many chimney pots—there are also many chimney pots.

There are also many chimney pots,—the "also" I could not make out until the second time.

The spire of ninety-five Milk street is half a mile away—the spire of ninety-five Milk street is half a mile away.

The spire of ninety-five Milk street, (I think he said,) is half a mile away. "The spire" I did not get till the second time, to be certain of it.

Nobody listening.

The new post-office is nearly completed—the new post-office is nearly completed—the new post-office is nearly completed.

Mr. Benjamin now listens.

The wind is directly west—the wind is directly west.

He said something of which I think I can understand the word "directly."

The wind is directly west—the wind is directly west—the wind is directly west.

Prof. Cross, listening.

The wind is directly west—the wind is directly west—the wind is directly west.

The wind is directly west, (I understood it the first time.)

[*Mr. Storrow: (to Mr. Hill,) Do you want to speak here?*

Mr. Hill: Not at present—let us see—suppose you take some of this.

From here to the end Mr. Hill dictated from a newspaper, and Mr. Jacques spoke into the transmitter what was so dictated.]

Mr. Jacques:

New York, Nov. 14, 1882.

Mr. Benjamin listening:

"1882" I get; I don't understand anything else.

(*The circuit was accidentallg broken during the first part of the sentence.*)

New York, Nov. 14, 1882—New York, Nov. 14, 1882.

I got the words "New York" and "1882." What comes in between sounds as though he was naming

	a month. I can't say what month; the sound was loud, but a good deal blurred.
The suit of Samuel Wilkeson against Henry Ward Beecher—the suit of Samuel Wilkeson against Henry Ward Beecher.	"Henry Ward Beecher"—nothing else; it was repeated twice.
was called for trial—was called for trial to-day—was called for trial to-day	Something like—*something* "sails to-day."
before Judge Barret—before Judge Barret—before Judge Barret	"Before Judge Harris" repeated three times.
in the Supreme Court Circuit—in the Supreme Court Circuit—in the Supreme Court Circuit.	"In the Supreme Court Circuit"—repeated three times; I got it the last time.
The action is for breach of contract—the action is for breach of contract—the action is for breach of contract.	"The action is for breach of" something; I suppose "breach of contract;" it sounds like that; I don't know whether it is or not.
[*Mr. Storrow: I would like to have Mr. Cross listen before this membrane gets too wet; it is getting damp now.*]	
Mr. Jacques:	*Prof. Cross, listening:*
The barometer is highest in Utah—the barometer is highest in Utah	The barometer is highest in Utah
and is low in the lake region—and is low in the lake region.	and is lowest in the lake region.
At Marblehead last evening	Something like "last evening." Ask him to repeat.
at Marblehead last evening.	
At Marblehead last evening	At Marblehead last evening
Mrs. Martha Chapman	Mrs. Martha Chapman
as the result of an election wager	as the result of a—
as the result of an election wager	as the result of an election wager
wheeled Mrs. Hannah Perry	wheeled Mrs. Hannah Perry
in a wheelbarrow	in a wheelbarrow
from her residence on Front street	from her residence on Front street
through State street to the square	through State street to the square
around the town hall, and returned.	around the town hall, and return.
The vehicle was tastefully decorated with Chinese lanterns.	The vehicle was tastefully decorated with Chinese lanterns.

Mrs. Moses Sweet carried a large banner

with the picture of a fighting cock

with the picture of a fighting cock
and the inscription
"13,000; clean sweep."

[*Here the membrane transmitter was taken off and an old box magneto telephone, such as were in commermercial use in* 1877, *was put on as transmitter.*

Mr. Jacques:

Arguments will be made—argument will be made.

arguments will be made.

Arguments will be made before the Alabama Claims Commission to-morrow

on the point whether insurance agents

can enter claims for all their companies

or whether each company must file its claim separately.

The question is of great importance to Alabama claims,

and it will be argued as a test case

by Shallabarger & Wilson.

Secretary Chandler was crowded with visitors this morning.

Secretary Chandler was crowded with visitors this morning.

Mrs. ——— Swett carried a large banner, (Rhoda I thought was the word.)

Repeat; there was an accidental noise here.

with the picture of a fighting cock
and the inscription
"13,000; clean sweep."

Mr. Benjamin, listening:

Repeat that, please; I have lost it.

No—no; I heard a noise, but it was utterly indistinguishable.

Argument is being made Trades Commission to-morrow, (all the rest is lost.)

On the insurance agent, (It is not so good as when I was here before.)

entertained for all their company,

or whether each company must buy separately.

The system is of great importance to Alabama—(something.)

of a—

No, I get the form of the words, but I do not get the words.

Professor Cross listens.

Secretary Chandler was something this morning—(ask him to repeat the intermediate words.)

It sounds a little indistinct, as if the membrane was slightly moist.

Secretary Chandler was crowded with visitors this morning.

Secretary Chandler was crowded with visitors this morning.

Secretary Chandler was crowded with visitors this morning.

[*These experiments have occupied about three quarters of an hour, there being no alteration in the adjustment of the instrument from beginning to end.*

A change of instruments: No. 56, *cone transmitter, without baseboard or adjustment, is now put on as transmitter; and No.* 55, *cone receiver, without baseboard or adjustment, as receiver.*]

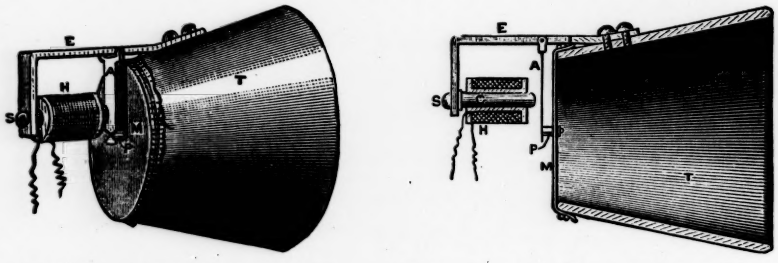


EXHIBIT 56.—MEMBRANE TELEPHONE TRANSMITTER. VIEW—HALF SIZE.

[*The receiver of this set is identical with the transmitter except that the cone tapers in from the diaphragm in the shape shown in exhibit* 53. *For dimensions see Prof. Cross' ans.* 7, infra.]

Mr. Jacques:

Hallo, hallo, hallo, hallo.

This afternoon the delegates

this afternoon the delegates

to the annual Baptist conference

assembled in the First Baptist church, Brooklyn.

There was a fair attendance of laymen.

The subject of discussion was the race and religion on the American continent.

Prof. Cross, listening.

This afternoon the delegates,—I thought I heard—ask him to repeat.

This afternoon the delegates of the New York something conference assembled in the First Baptist church, Brooklyn. (This is much louder than before.)

There was a fair attendance of laymen.

The subject of discussion was—something—and religion. I thought he said "race and religion"—on the American continent.

The conference will be continued to-morrow and Thursday
and a different topic will be considered each day.
Portsmouth, England, Nov. 14, 1882

The steamer Westphalia has been docked here.
The captain of the Westphalia says
the collision between his steamer and another steamer was caused
by the latter improperly starboarding,

the collision between his steamer and another steamer was caused
He remained on the spot for two hours burning lights,
but the other steamer disappeared.

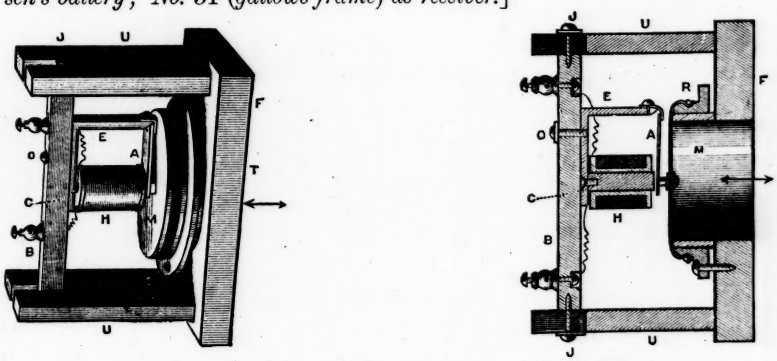
The conference will be continued to-morrow and Thursday
and a different topic will be considered each day.
Portsmouth, England, November 14, 1882—I was not expecting anything when he said that, so that "Portsmouth" may be wrong.

The steamer Westphalia has been docked here.
The captain of the Westphalia says
intelligence between his steamer and another steamer was caused
by the latter improperly starboarding.
(Ask him to repeat the preceding sentence as I was changing my hands just at that time.)
the collision.

He remained on the spot for two hours burning lights,
but the other steamer disappeared.

[*Time of experiment with Nos.* 54 *and* 53 *was eight minutes.*

Instrument No. 52, (*gallows frame*) *as transmitter; with* 8 *cells of Bunsen's battery; No.* 51 (*gallows frame*) *as receiver.*]



NOS. 51 AND 52, BELL'S SECOND TELEPHONE OF 1875.
Scale of Section, one fourth size.

Hallo, hallo, hallo, do you hear this, do you hear this, do you hear this, hallo, hallo, hallo, one, two, three, four, hallo.

(*Mr. Jacques here adjusted the instrument, the bar having slipped and thrown it out of adjustment.*)

There is some trouble with your transmitter; we hear nothing.

Prof. Cross listening:

Hallo, hallo, do you hear this, do you hear this, do you hear this.

Hallo, do you hear this; that is fair.

Mr. Jacques:

A despatch to the *Times* from Paris

Ask him to repeat.

A despatch to the *Times* from Paris

The despatch—something or other—from Paris.

says the anarchists who were arrested

says the anarchists who were arrested

something—were arrested.

at Lyons have been committed for trial—at Lyons have been committed for trial.

at Lyons have been committed for—something.

A preliminary investigation—

a preliminary investigation

The preliminary—(repeat it; I think it is investigation.)

a preliminary investigation showed the existence of a scheme—

showed the existence of a scheme for a partial rising at various points—

shows the resistance of a something.

for a partial rising at various points

was a partial rising at various points—ask him to repeat, Mr. Smith moved.

in order to pave the way—

in order to pave the way

the offer paved the way

for a general outbreak in the election to-day.

there was a general outbreak.

(*The transmitting instrument was here readjusted; the bar had slipped and was put back in place.*]

In the election to-day—in the election to-day	In the election to-day, (I got that the first time,)
for United States Senator—for United States Senator,	for United States Senator
for the short term in the Senate—for the short term in the Senate,	for the short term in the Senate,
Mr. Barlow received 29 votes—Mr. Barlow received 29 votes,	Mr. Barlow received 29 votes,
and Mr. Hill 14, and Mr. Hill 14.	and Mr. Hill 14. (These were all heard the first time.)
In the House Mr. Barlow received 79 votes,	In the House Mr. Barlow received 79 votes,
in the House Mr. Barlow received 79 votes,	
and Mr. Hill 91, and Mr. Hill 91;	and Mr. Hill 91;
there was no election—there was no election.	there was no election.
	Mr. Benjamin listening at No. 51:
Troy, New York, Nov. 14, 1882—Troy, New York, Nov. 14, 1882.	New York, Nov. 14, 1882.
There is great excitement here—there is great excitement here	There is great excitement here
over the organization—over the organization	over the organization
of the new board of aldermen—of the new board of aldermen	of the new board of aldermen
the republicans and independents—the republicans and independents	The republicans and independents (tell him not to repeat unless I ask him to; I get it the first time.)
have 13 members	the—something—members.
have 13 members	have 13 members
have 13 members	
and the democrats 12	and the democrats one
and the democrats 12	
the latter	
the latter at the meeting of the old	the latter on the meeting of the
the latter at the meeting of the old board	the latter on the meeting of the old board

Hallo, hallo, hallo, do you hear this, do you hear this, do you hear this, hallo, hallo, hallo, one, two, three, four, hallo.

(*Mr. Jacques here adjusted the instrument, the bar having slipped and thrown it out of adjustment.*)

There is some trouble with your transmitter; we hear nothing.

Prof. Cross listening:

Hallo, hallo, do you hear this, do you hear this, do you hear this.

Hallo, do you hear this; that is fair.

Mr. Jacques:

A despatch to the *Times* from Paris

Ask him to repeat.

A despatch to the *Times* from Paris

The despatch—something or other—from Paris.

says the anarchists who were arrested

says the anarchists who were arrested

something—were arrested.

at Lyons have been committed for trial—at Lyons have been committed for trial.

at Lyons have been committed for—something.

A preliminary investigation—

a preliminary investigation

The preliminary—(repeat it; I think it is investigation.)

a preliminary investigation showed the existence of a scheme—

showed the existence of a scheme

shows the resistance of a something.

for a partial rising at various points—

for a partial rising at various points

was a partial rising at various points—ask him to repeat, Mr. Smith moved.

in order to pave the way—

in order to pave the way

the offer paved the way

for a general outbreak in the election to-day.

there was a general outbreak.

(*The transmitting instrument was here readjusted; the bar had slipped and was put back in place.*]

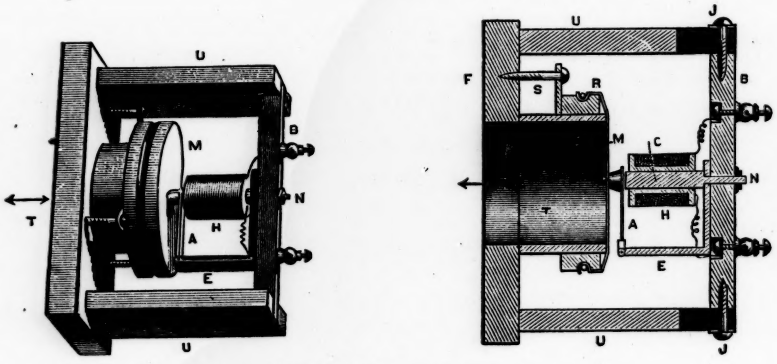
In the election to-day—in the election to-day	In the election to-day, (I got that the first time,)
for United States Senator—for United States Senator,	for United States Senator
for the short term in the Senate—for the short term in the Senate,	for the short term in the Senate,
Mr. Barlow received 29 votes—Mr. Barlow received 29 votes,	Mr. Barlow received 29 votes,
and Mr. Hill 14, and Mr. Hill 14.	and Mr. Hill 14.
	(These were all heard the first time.)
In the House Mr. Barlow received 79 votes,	In the House Mr. Barlow received 79 votes,
in the House Mr. Barlow received 79 votes,	
and Mr. Hill 91, and Mr. Hill 91;	and Mr. Hill 91;
there was no election—there was no election.	there was no election.
	Mr. Benjamin listening at No. 51:
Troy, New York, Nov. 14, 1882—Troy, New York, Nov. 14, 1882.	New York, Nov. 14, 1882.
There is great excitement here—there is great excitement here	There is great excitement here
over the organization—over the organization	over the organization
of the new board of aldermen—of the new board of aldermen	of the new board of aldermen
the republicans and independents—the republicans and independents	The republicans and independents (tell him not to repeat unless I ask him to; I get it the first time.)
have 13 members	the—something—members.
have 13 members	have 13 members
have 13 members	
and the democrats 12	and the democrats one
and the democrats 12	
the latter	
the latter at the meeting of the old	the latter on the meeting of the
the latter at the meeting of the old board	the latter on the meeting of the old board

seated a candidate (repeat that; noise blotted it out.)
seated a candidate
seated a candidate
seated a candidate sounded like "heated a candidate."
seated—seated a candidate.

[*Mr. Storrow, through a tell-tale line: that is what it sounds like—seated a candidate—screw up your binding posts—the current makes the thing jump—say when you are ready.*] (*Prof. Cross adjusted the instrument stating that he did so because it had been thrown out of adjustment by putting it upon the table.*)

Mr. Jacques:
hallo, hallo, hallo
who claimed to be elected to fill a vacancy. who claimed to be elected.

[(*Time of experiment* 16 *minutes.*)
Instruments Nos. 49 *and* 50 *are now connected.*]



NOS. 49 AND 50, BELL'S FIRST TELEPHONE OF 1875.
Scale of Section, one fourth size.

Mr. Jacques:
Hallo, hallo, hallo, is it right—is it right—is it right—hallo, hallo, hallo, do you understand, do you understand.

Mr. Jacques: *Prof. Cross listening at No.* 49*:*
A scene which occasioned—a scene which occasioned A scene is occasioned—it sounds like
a scene which occasioned

quite a sensation	quite a sensation
quite a sensation	
occurred last night	occurred last night
in the Globe theater	in the Globe theater
during the performance	during the performance
of Tennyson's new pastoral drama,	Repeat—"the Tennyson's something," I thought I heard,
of Tennyson's new pastoral drama,	of Tennyson's mays,
of Tennyson's new pastoral drama,	of Tennyson's new pastoral drama.
	(Mr. Benjamin, through tell-tale line, "Better repeat everything.")
the promise of May,	Once more,
the promise of May,	the promise of May.
the promise of May.	
Among those present—among those present	Among those present
was the Marquis of Queensbury—was the Marquis—was the Marquis of Queensbury,	was the Marquis of Kingsbury,
who is an avowed free-thinker—who is an avowed free-thinker,	
who is an avowed free-thinker.	is an avowed free-thinker.
He rose excitedly from his seat—he rose ex—he rose excitedly from his seat,	He rose excitedly on his seat
and loudly protested	and loudly protested
against Tennyson's representation—against Tennyson's representation	against Tennyson's representation,
(*The screw again became loose and the bar slipped; screwed together again.*)	
of the principles of free thought—of the principles of free thought,	is the principle of free speech—ask him to repeat.
of the principles of free thought—of the principles of free thought,	
as enunciated by one—as enunciated by one—as enunciated by one—as enunciated by one	as—being something—by one,
of the characters of the play—of	

the characters of the play—of the
characters of the play. as the characters are performed.

Q. 6. At the close of the tests made with magneto transmitters on that occasion, an attempt was made to connect up and use a Blake transmitter that happened to be in one of the rooms, the results of the use of which, as taken down by the short-hand writers, you have omitted from your last answer. Will you please state whether that Blake transmitter upon examination was found to be in working order or out of repair?

Ans. The Blake transmitter referred to was found to be so much out of repair that it could not have worked efficiently and satisfactorily with any receiver whatever.

Q. 7. Will you please describe the wooden cone instruments exhibits Nos. 53, 54, 55, and 56, aiding yourself, if you please, by the diagrams found in your fifth answer?

Ans. Exhibits 56 and 55 form the transmitter and receiver of a speaking-telephone. The transmitter and a longitudinal section of it are shown in the following drawings, which are half the size of the exhibit instruments:

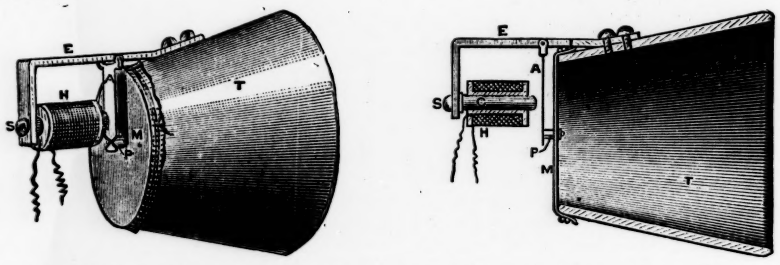


EXHIBIT 56.—MEMBRANE TELEPHONE TRANSMITTER. VIEW—HALF SIZE.

T is a wooden truncated conical mouthpiece. Across the smaller end of this is tightly stretched a membrane, M. A is an armature hinged at its upper extremity, and having its lower extremity connected with the middle of the membrane by a small cylindrical piece of brass, P, so that when the membrane is set into vibration by sound waves, the armature vibrates with it.

H is the helix of an electro-magnet of which C is the core.

This core is connected by a screw, S, with a bent piece of soft iron, E, whose farther end is permanently secured to the conical mouthpiece. The armature A is hinged to E, and is polarized through its contact with E. The core C is fixed by the screw S, and the end of the core which is nearest to the armature is at a slight distance from the latter. This dis-

tance cannot be altered except by varying the length of the core or by placing washers between it and the piece E, to which it is screwed.

The receiver, exhibit 55, is identical in its construction with the transmitter, except that the wooden cone to which the membrane is attached, has its smaller end opposite the end to which the membrane is attached, and made so small as to be capable of entering the ear when the instrument is used. The membranes in the two instruments are of the same size, and the two instruments bear the same relation to each other as A and L in the patent.

Exhibits 54 and 53 are also a transmitter and receiver respectively. They differ from the instruments which I have already described only in minor details. They are attached to small base-boards for convenience in use, and each is provided with an arrangement for stretching the membrane similar to that used in an ordinary tamborine. They have also two adjusting screws, one capable of moving the hinge of the armature along the soft iron bar E, and the other serving to move the electro-magnet slightly so that its core can be placed at a proper distance from the armature. In other respects the two sets of instruments are identical.

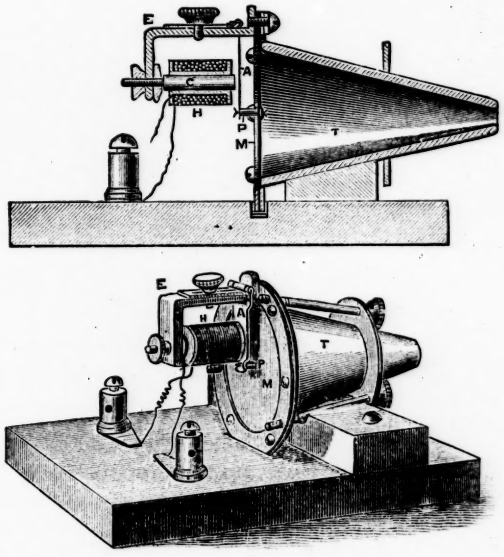


EXHIBIT 53.—MEMBRANE TELEPHONE TRANSMITTER. VIEW—HALF SIZE.

I produce a drawing of exhibit 53, the receiver belonging to the set which I have just described. It is half the size of the original.

Q. 8. In connection with Mr. Watson's deposition there is printed page 228 of complainants' record, an extract from your deposition in the Dowd case. Are the statements therein contained true; and did you make that deposition immediately after trying the experiments therein stated?

Ans. The statements are true; and the deposition was made immediately after the trials there described.

Q. 9. In the various trials of membrane telephones which have been referred to, and made by you, what kind of battery have you used? Have you always used the same number of cells; if not, how many have you usually used, and how many cells have you found suitable?

Ans. I have most commonly used a Bunsen battery, substituting chromic acid solution for nitric acid.

I have used from one to eight cells, but have generally found from three to five cells to give the best effects. There is a gain in the working of the apparatus by increasing the number of cells up to four or five of the kind mentioned. Beyond this the gain is less marked, and the addition of more cells sometimes seems injurious. There is apt to be trouble from undue heating of the helix if so many are used.

Q. 10. In Mr. Benjamin's deposition, pp. 1204–1209, inclusive, and also in his answer to cross-interrogatories 85, 86, and 87, (page 1287,) he referred to and produced a transmitter and receiver alleged to have been constructed in accordance with Fig. 7 of Mr. Bell's patent of March 7, 1876. The cones of the two instruments are made of brass, and for that reason have sometimes been referred to for convenience as "Mr. Benjamin's brass cone telephones."

Did you examine those instruments in New York at the time when the Drawbaugh instruments were tested at the office of the People's Telephone Company, on the 28th, 29th, and 30th of March, 1882?

Ans. I examined the instruments carefully at that time.

Q. 11. I now show you another pair of brass cone instruments which are substantially the same as those produced by Mr. Benjamin, except that at the present moment a sufficient thickness of washers is inserted between the back end of the core of the electo-magnet and the heel piece, to bring the active end of the core and the armature in close proximity. Have you connected these two instruments together with a battery and endeavored to transmit vocal and other sounds with them?

Ans. I have done so.

Q. 12. In Mr. Benjamin's testimony, already referred to, he says that he connected together his two brass cone instruments, and also connected

each of them with a magneto instrument of modern construction, known as the Tisdel receiver, and frequently referred to in this case; and that neither when using the two membrane brass cone telephones together, nor when using either one with the Tisdel magneto instrument, could he hear any sound whatever at the receiver when the transmitter was talked to. In your use of the two instruments now produced, which I will call "Professor Cross's brass cone telephones," have you been able to receive audible sounds at this membrane receiver when this membrane transmitter was talked into?

(*Complainants' counsel puts the said two instruments in evidence, to be marked "Professor Cross' brass cone telephones," Nos. 57 and 58, respectively.*"

Ans. I have understood perfectly, and without difficulty, sentences transmitted by the use of this receiver and this transmitter.

Q. 13. Was there any rule or practice known and commonly acted upon by electricians, at the date of Mr. Bell's patent, with regard to the distance between the pole of an electro-magnet and its armature, where the forces acting upon the apparatus were slight, or were frequent in their changes; and if so, what was it?

Ans. It was always customary in such cases to place the moving armature as close to the pole of the magnet as was practicable. This rule was universally acted upon where rapid and strong changes were to be produced in the action of a magnet upon an armature, or of an armature upon a magnet.

Q. 14. State whether or not there is anything in the nature of the apparatus, Fig. 7 of the Bell patent, and its operation, which would lead to any different rule for placing the armature with reference to the electro-magnet in the instruments which constitute this apparatus.

Ans. There is not.

Q. 15. Please look at the certified copy of the Bell patent of March 7, 1876, heretofore filed in this case; and tell me the distance in the drawing, Fig. 7, between the pole of the electro-magnet and the armature.

Ans. It is a little over one fiftieth of an inch.

Q. 16. Is there any direction in the patent for varying that distance?

(*Objected to, as the certified copy referred to in the last interrogatory is one of the printed photo-lithograph copies used in the Patent Office, which photo-lithographs are always reduced below the size of the original drawings filed by applicants with their applications for patents, and Mr. Bell's specification was not made up with reference to the Patent Office photo-lithographs, but to the original drawings filed by him.*

Complainants' counsel says that he does not understand it to be denied that the drawings in the certified copy of the patent which the witness has just measured from are of the same size as those in the patent actually issued by the Office.)

Ans. There is not.

Q. 17. I now show you a certified photo-lithographic *fac-simile* of the drawing filed by Mr. Bell with his application for said patent, the certificate of the Patent Office with reference thereto, being as follows:

"This is to certify that the annexed are *fac-similes* of the original drawings filed in this office, by Alexander Graham Bell, February 14, 1876, and on which patent No. 174,465 issued to him March 7, 1876. Said *fac-similes* are reproduced from the original by photo-lithography, and are of the same size as said originals."

Will you please measure and state the distance between the armature and the pole of the electro-magnet in this full-sized *fac-simile* of the drawing filed by Mr. Bell as part of his application for his patent of March 7, 1876?

Ans. About one thirty-second of an inch.

(*Complainants' counsel offers the said certified drawing in evidence, and it is marked "Full-sized fac-simile of Bell's application drawings."*)

Q. 18. Was there any reason known to electricians at the date of Mr. Bell's patent which should lead one to increase that distance in the construction of such an apparatus as Fig. 7, except so far as might be necessary, if at all, to prevent the armature from striking the electro-magnet when vibrating during the operation of the instrument?

Ans. There was not.

Q. 19. Do you know of any fact or rule in science or practice which should require a skilled electrician desiring to double, for instance, the general size of an electrical apparatus shown in a drawing or diagram, to double the distance between the electro-magnet and armature?

Ans. I do not.

Q. 20. Do you know of any scientific fact or principle which requires a skilled electrician, or which would lead a skilled electrician who desired to have an apparatus like Fig. 7 but of double the size, to double the distance between the armature and the electro-magnet?

Ans. I do not.

Q. 21. Is there any scientific fact relating to electro-magnets and their use which requires an increased size of the electro-magnet and armature, to be accompanied by the same increase in the distance between the pole

of the electro-magnet and armature, the instruments being the same except for the increase in size?

Ans. There is not.

Q. 22. Was there any fact with regard to the mutual action between armature and electro-magnet known at the date of Mr. Bell's patent which would forbid a constructor of electrical apparatus to double the distance between electro-magnet and armature merely on account of doubling the size of electro-magnet and armature; and if so, what was it?

Ans. It was well known long previous to the date of Mr. Bell's patent that to produce the strongest effects the moving armature should be as close as practicable to the core of the electro-magnet. The attraction of a magnet diminishes as the square of the distance from its pole increases; and the mutual action between a pole and its armature falls off even somewhat more rapidly as the distance increases. Hence, the efficiency of any apparatus of this kind is greatly impaired if the distance between the armature and its magnet is too greatly increased. If, for example, the whole apparatus were doubled in size and the armature at the same time removed to twice its former distance from the core, if the absolute strength of the magnet remained the same the effect produced by the moving armature would be at most only one fourth as great; nor would the increased size of the electro-magnet necessarily increase the strength, which, on the contrary, might be diminished by the change.

Q. 23. Have you made any experiments as to the effect of increasing the distance between the armature and the magnet of the butter-stamp telephone in ordinary commercial use; and if so, at about what distance does the instrument become practically worthless for the purpose of transmitting and receiving articulate speech?

Ans. I find, as the result of experiments which I have tried, that with a distance of about one eighth of an inch between the magnets and the diaphragms it becomes impossible to transmit articulate speech with the butter-stamp magneto telephone.

Q. 24. It appears, from the defendants' record, that you were present during the first day of the tests of the Drawbaugh exhibits in New York on the 28th of March, 1882, and not after the first day; were you during that day in the front room or in the back room, or both?

Ans. During the day I was in each of the rooms for a part of the time, but during the greater part of the day I was in the front room.

Q. 25. Mr. Pope, a witness called for the complainant, in his answer to interrogatory 70, page 1322 of complainants' record, produced a paper

called "complainants' joint memorandum of first day's tests with Drawbaugh's exhibits," and stated the manner in which it was prepared. Is the statement in Mr. Pope's answer as to the manner in which it was prepared correct, so far as you are concerned? Did you examine said joint memorandum shortly after those New York tests, and verify it, so far as your personal recollection and observation on that day enabled you to do so, and did you and do you find it to be correct?

Ans. The statements in Mr. Pope's answer as to the manner in which the joint memorandum of the first day's experiments was prepared are correct, so far as my observations are concerned. A very short time after the experiments I went over the whole joint memorandum of the first day's tests, compared it with my own notes, and corrected everything not in accordance with my notes; and I have recently reëxamined it. It was and is correct.

Q. 26. In Mr. Pope's same deposition, pages 1323–1329, he produced and read, as part of his answers, systematized statements concerning those New York tests. Have you read over so much of said statements as relate to the first day's work, and do you find them correct?

Ans. I have done so, and find them to be correct.

Q. 27. Will you state whether or not the Drawbaugh instrument "F reproduced," as used at those tests, is an instrument which, by its ordinary operation, when spoken to, tends to throw itself out of those conditions which are necessary to the transmission by it of any articulate sounds in an intelligible manner?

Ans. The instrument is subject to this great defect so that it is impossible for it to remain in adjustment for more than a short time.

Q. 28. It appears from your notes that you listened at most or all of the receivers which were tested during the first day, and that you occasionally understood a few words. Did it or did it not require careful listening on your part, in addition to the other precautions which have been referred to, to enable you to obtain this result?

Ans. Besides the other precautions it required the most careful listening even to obtain this result.

Q. 29. From your experience in the use of telephones can you form an opinion as to how much less would have been heard, even with the same precautions and under the same circumstances, if the listener were a person with untrained ears not accustomed to scientific observations—for example, were a country merchant, a farmer, or other laboring man?

[*Objected to as incompetent.*]

Ans. I think that it is very doubtful if such a person with untrained faculties and with no experience whatever in the use of any kind of a telephone would have been able to understand anything.

Q. 30. Will you please produce a Bell magneto telephone of the ordinary commercial form—such as has been referred to in the testimony—cut open so as to show its interior?

Ans. I here produce it.

(*Complainants' counsel puts the same in evidence, as Complainants' Exhibit No.* 59 *and it is marked "Bell Magneto Telephone, butter-stamp form.*")

Q. 31. Will you please produce a Blake transmitter, so called, of the style in ordinary commercial use?

Ans. I here produce it.

(*Complainants' counsel puts the same in evidence as Complainants' Exhibit No.* 60 *and it is marked "Blake Transmitter.*")

Q. 32. When and how did you first become acquainted with Professor Alexander Graham Bell?

Ans. In the early part of 1874, through his attendance on a portion of a course of public lectures on acoustics which I was then giving at the Institute of Technology in this city.

Q. 33. What time in the year did your scholastic term end?

Ans. The term ends with the beginning of June.

Q. 34. From the first part of 1874, when you became acquainted with Mr. Bell, up to the beginning of June, 1874, did you see him much or little?

Ans. I saw him very frequently.

Q. 35. During the following winter, from the fall of 1874 to the spring of 1875, did you meet him; and if so, how much?

Ans. I continued to see him frequently, though not so often as the preceding spring.

Q. 36. Did he or not, during that winter, speak to you about the electrical transmission of speech; and, if so, did he state to you any conception he had as to how it could be accomplished, and did or did not his mind appear to you to be much occupied on that subject?

Ans. We conversed together at that time regarding the transmission of speech. I understood that he proposed to do this by means of electrical undulations, and that these undulations were to be produced by the vibration of a reed in front of a magnet. At some time during this

winter he communicated to me the idea of vibrating the reed by means of a membrane.

The subject of the transmission of speech was one which evidently occupied his thoughts, and to accomplish which he was striving to develop an efficient method.

Q. 37. Did you form any opinion at that time as to the theoretical adequacy and perfection of the undulatory-current-method which he then disclosed to you?

[*Objected to as incompetent and immaterial.*]

Ans. As soon as the method itself was described, I saw that it was theoretically perfect, and, therefore, in theory, adequate to the transmission of speech.

Q. 38. Did you form any opinion at the time, and if so, what, as to the practicability of accomplishing it according to that method by employing an armature and membrane vibrated by the voice to generate the undulatory current relied upon?

[*Same objection, and further objected to as assuming and leading.*]

Ans. I supposed at that time that the effect produced by the vibration of an armature would be entirely too small to accomplish the desired end.

Q. 39. Did he or did he not, during that winter, speak to you of the employment, for purposes of multiple telegraphy, of currents produced by the sonorous vibrations of a reed armature in front of an electromagnet?

Ans. He did.

Q. 40. Did you form any opinion at that time as to the practicability of employing currents so produced, for the purpose of harmonic multiple telegraphy, and if so, what was it?

[*Objected to as incompetent and immaterial.*]

Ans. This plan seemed to me to involve far less difficulty than the transmission of speech. I did not consider very fully what difficulties might be found with it in practice.

Q. 41. Did you know, during that winter and spring, or did you hear, during that winter and spring, of anything in his condition and surroundings which was calculated to prevent him from devoting his time and attention to experimental work concerning the electrical transmission of speech; and if so, what was it?

[*Objected to as calling for hearsay, and otherwise incompetent.*]

Ans. I understood that his means were very limited, so that he was obliged to confine himself very closely to his classes, which necessarily occupied a great part of his time. I also understood that he was under obligation to certain persons to devote his attention and experimentation exclusively to multiple telegraphy.

(Adjourned to May 10.)

MAY 10.

Q. 42. Please state whether the electrical difficulties in the use of a harmonic multiple telegraph apparatus using induced undulatory currents, and those involved in the use of an apparatus for the transmission of speech, like that shown in Fig. 7 of the patent, have any similarity of character, and involve similar or altogether diverse lines of study and experiment to overcome them?

Ans. The electrical difficulties which would be encountered in the operation of the two instruments are similar in character, though different in degree. Each advance in perfecting the transmission of signals by the undulatory current, so far as the elcetrical difficulties are concerned, would be a new step toward the practical solution of the electrical problems involved in the transmission of articulate speech.

Q. 43. Would the electrical difficulties referred to be encountered in the construction and use of a circuit-breaking harmonic multiple telegraph?

Ans. They would not, since the requisite variations in the strength of current on making and breaking the circuit, could easily be secured by the use of a sufficiently powerful battery.

Q. 44. I understand that your term for the year ended about the 1st of June, 1875. Did you see Mr. Bell during that summer; and if so, how much?

Ans. During the summer of 1875 I saw Mr. Bell rarely, if at all. I do not recollect that I saw him at all.

Q. 45. During the remainder of the year 1875 did you see him; and if so, how much?

Ans. I was away from the city during August and September of that year, and early in October was attacked with a serious illness which confined me to the house for over two months, and prevented me from doing more than was necessary in my regular professional work during the winter.

Until after the beginning of 1876 I did not see Mr. Bell more than two or three times at the most, and then only casually for a very few minutes.

Q. 46. On an inspection of the drawing Fig. 7 of Mr. Bell's patent, do you consider it a drawing to be literally followed in all its points and details, or as a diagram, the different well-known members of which were to be constructed and arranged according to the knowledge of the art as usually practiced?

[*Objected to as incompetent and leading.*]

Ans. It seems to me to be a sketch representing the construction and arrangement of the apparatus in such a way that one possessing ordinary electrical knowledge would be able to construct and operate the apparatus successfully. I think that no one having the knowledge generally understood at the time, of acoustics and electricity, would think of following the sketch in its minute details.

Q. 47. Please state as nearly as you can when the Blake transmitter went into commercial use.

Ans. In the winter of 1878–9.

Cross-examination, de bene esse, *by L. Hill, Esq., of counsel for respondents:*

Cross-Q. 48. In your answer to Interrogatory 46, you state in effect that you think that anyone possessing ordinary electrical knowledge would be able, from the drawing figure 7 of Bell's patent, to construct and operate the apparatus successfully; did you mean successfully for the purpose of transmitting and reproducing vocal speech by electricity?

Ans. I did.

Cross-Q. 49. Do you regard Mr. Bell and Mr. Watson, his assistant, as gentlemen who on March 7, 1876, and for nine months prior to that time, were in the possession of ordinary electrical knowledge?

Ans. Neither of these gentlemen, so far as I am aware, claimed to be a skilled electrician.

Cross-Q. 50. Then when you stated, in answer to Interrogatory 46, that one possessing ordinary electrical knowledge would be able, from that drawing, to construct and operate the apparatus successfully, I suppose you did not mean to imply that Mr. Bell or Mr. Watson could, from that drawing, construct and operate the apparatus successfully, inasmuch as you do not class them among persons possessing ordinary electrical knowledge. Am I correct, and if not, please explain more fully what you mean.

Ans. In my reply to the question referred to I stated an opinion which I believed, and still believe, to be correct, without considering in any way whatever the knowledge or lack of knowledge of any particular persons.

Cross-Q. 51. In your answer to Interrogatory 2 you state that "That feature to which the most prominence is given in the specification is the similarity of form between the sound vibrations which actuate the instrument, and the electrical undulations due to them. . . . . This is the only feature specifically mentioned in the claim. This feature secures the transmission of quality; it has no purpose, function, or effect except the transmission of quality which includes articulate speech."

Please explain more fully what you meant by that last sentence quoted and particularly by the words "transmission of quality which *includes* articulate speech."

Did you mean that the transmission of quality is all that is necessary to transmit articulate speech, and if not, please state precisely what you did mean?

Ans. I meant that an instrument which would transmit all the variations in quality of any and every sound would be capable of transmitting articulate speech, assuming, of course, that if it could transmit quality it would necessarily transmit variations in pitch and loudness.

Cross-Q. 52. And conversely an apparatus which would not transmit and reproduce quality could not transmit and reproduce articulate speech; is not that true?

Ans. It is true, recollecting, of course, that absolute perfection in the transmission of quality is not necessary for the reproduction of speech, but that the quality must be reproduced with sufficient exactness to enable one to recognize the speech transmitted.

Cross-Q. 53. Then, from the qualification which you have added in your last answer, I should judge it to be unnecessary for the transmission and reproduction of articulate speech by electricity that the electrical undulations should be exactly similar in form to the air vibrations caused by the sound, or that they should be represented by exactly similar curves, but that on the contrary it would be sufficient if they were approximately similar in form or were represented graphically by approximately similar curves; am I correct in your judgment?

Ans. In an absolutely perfect apparatus there would be exact similarity between the acoustic and electrical undulations, and they would be represented by exactly similar curves.

In proportion as this theoretical perfection is departed from, the result becomes less and less satisfactory.

An extremely slight departure from theoretical perfection impairs noticeably the operation of the instrument; and changes which would scarcely be evident to the eye if the curves representing the vibrations were represented on any moderate scale, would probably render the instrument nearly or quite useless for the practical transmission of speech. The same conditions hold here that hold in an acoustic telephone.

Cross-Q. 54. And is it true that changes in the instrument which would scarcely be evident to the eye might so impair the operation of the apparatus as to render it practically useless for the transmission of speech?

Ans. That might possibly be the case if the eye was not an observing one. Thus differences in the tension of the membrane might produce such an effect.

Cross-Q. 55. Please explain how differences in the tension of the membrane would operate to practically change the character of the effect?

Ans. If the membrane of the transmitter, for example, were too greatly relaxed, or if it were somewhat moist, it might be unable to take up the vibrations of the sound waves from the air.

Cross-Q. 56. Assuming a stretched membrane with an armature attached to it, do you understand that such membrane has a tendency to set up any normal rate of vibration of its own?

Ans. A membrane thus weighted has, like every body, a special period or special periods in which it will vibrate if slightly disturbed, and then left to itself; executing then what are called in acoustics "free vibrations." If such a membrane is acted upon by continued vibrations outside of itself, as by the sound waves produced in the air by the voice, it will execute what are called "forced" or "sympathetic" vibrations in response to this continued excitation. The magnitude of its vibration will be greater in proportion as the impulses actuating it coincide more nearly in period with any of its possible periods of vibration. A membrane is capable of vibrating in an enormously large number of ways, so that it is capable of vibrating in accordance with the various vibrations produced by the voice. It is only in the sense which I have just explained that the possible rates of vibration of the membrane when left to itself affect its vibration when actuated by external sound waves.

(Adjourned.)

Cross-Q. 57. Do you understand that the metal diaphragm of a telephone has also a tendency to vibrate at a normal rate peculiar to itself?

Ans. The answer which I have made with regard to the weighted membrane applies equally to the metal diaphragm. So long as it is actuated by the voice it vibrates in correspondence with it. If, after having been set into vibration, it is left to itself, it vibrates at a rate dependent upon its physical characteristics only.

Cross-Q. 58. In a former answer you mentioned the fact that during your telephone tests of November 15, 1882, here in Boston, an attempt was made to employ a Blake transmitter, which, however, failed to operate satisfactorily, and was afterwards found to be out of order. Do you remember what was the matter with it?

Ans. The instrument was a very old one which had been used, now and then, for a number of years. It had been subjected to very hard usage, and was put in as a transmitter in the experiments referred to hastily on account of a casual suggestion which some one made at the moment. I was not in the transmitting room at this time, but was informed of the fact of the proposed use of the transmitter through the telphone line connecting the transmitting and receiving stations. I understood that the great difficulty which rendered the transmitter inefficient, even when tried with a modern Bell magneto receiver, was that the rubber dampening pad attached to the spring was torn and partly removed from the spring.

Cross-Q. 59. Will you please inform the court what the rubber dampening pad of the Blake transmitter is; how it is arranged and combined with the other parts of the instrument, and what function it performs, and how?

[*Objected to as immaterial.*]

Ans. The rubber dampening pad is a small piece of soft rubber attached to one end of a steel spring whose further end is secured by a screw to the metal frame of the instrument. In the Exhibit Blake Transmitter the rubber pad is made by slipping a short piece of soft rubber tubing over the end of the steel spring, and to the side next the diaphragm is glued what is apparently a piece of cloth-faced rubber. The pad serves to dampen the diaphragm and prevents a continuance of its vibration after the voice of the speaker has ceased. It is also very possible that it enables the diaphragm to vibrate somewhat more readily in response to all the tones of the voice than it would otherwise do.

Cross-Q. 60. I have no doubt that the statement contained in the last

clause of your answer is correct, and would like to have you explain to the court the reason why it enables the diaphragm to respond to all the tones of the voice more readily than it would otherwise do.

[*Same objection, and also that the witness has not stated it as a fact that it does act in the manner referred to in the last question, and he ought not to be called upon to give the explanation upon the assertion of the counsel that he has no doubt about the fact.*

Respondents' counsel replies that the witness has stated a faith that is in him, and now we want to know the reason of the faith.

Counsel for complainants suggests that in that view the witness should be called upon to explain not the fact, which he has not said he has faith in, but why he thinks it very possible that the fact may be so.]

Ans. I should not be willing to make any positive assertion as to such an action of the dampener without a very thorough course of experimentation; and I know, as a matter of fact, that the use of such a dampener is not at all essential in the transmission of speech. My reason for the statement which I made as to the possibility of a better response of the diaphragm when damped, is that the use of a dampener is well known in acoustic apparatus in connection with the vibration of membranes as a mode of varying the tones to which a given stretched membrane will most readily respond; and it is possible that the tones actually occurring in ordinary speech may be more efficiently responded to by a diaphragm of the material, rigidity, thickness, and diameter of the Blake transmitter diaphragm when this is lightly touched at a certain point than if it were perfectly free.

Cross-Q. 61. The dampening pad improves the operation of the Blake transmitter, does it not?

[*Objected to as immaterial.*]

Ans. It does.

Cross-Q. 62. And it is used in all of the Blake transmitters manufactured for the Bell Telephone Company, is it not?

[*Same objection.*]

Ans. It is, so far as my knowledge extends.

Cross-Q. 63. Will you state just how the effect of such an instrument with a dampening pad differs from the effect obtained without a dampening pad—that is to say, state in what respect the articulate speech reproduced by the telephone is improved by the use of a dampening pad in the transmitter; and whether such pad modifies the pitch, loudness, or quality of the sounds reproduced.

[*Same objection.*]

Ans. I have not made any very careful experiments in connection with the study of the function of the dampening pad, so that I can state only the results of casual observation. I think that its chief effect is to remove a tendency of the diaphragm to continue in its already acquired state of vibration for a brief period, instead of immediately taking up the vibrations of the voice if these have changed, so that a lack of sharpness and clearness in the articulation is produced.

Cross-Q. 64. Then I should understand it to be the fact that the articulation is sharper and clearer when the dampening pad is used than when it is not used; is that true?

[*Same objection.*]

Ans. That I understand to be the case.

Cross-Q. 65. From the fact that the articulation without the dampening pad lacks clearness and sharpness, coupled with the fact that the dampening pad tends to remove the obstruction to clear and sharp articulation, and the fact that the dampening pad certainly cannot produce any vibration in the diaphragm, but only can obstruct or stop out vibrations in whole or in part, it would seem to follow almost conclusively that without the dampening pad the action of the voice sets up vibrations in the transmitting diaphragm which are either unnecessary and obstructive, or the continuation of which is unnecessary and obstructive, and which, or the continuation of which beyond the moment of their usefulness, must be due to the natural tendency of the diaphragm to vibrate at a normal rate of its own. Do you think this is a correct statement?

(*Same objection.*)

Ans. I think that, to say the least, the statement is liable to be misunderstood. It is, of course, very desirable that the diaphragm shall vibrate as perfectly as possible in response to the air vibrations produced by the voice, and that no vibrations produced in it by the voice at previous moments shall persist.

If the diaphragm at one moment is vibrating under the influence of the voice at a particular rate, there is, of course, a tendency, in consequence of the mere momentum of the plate, to continue vibrating in this same manner for a brief period. This tendency to a prolongation of the vibration, even if very slight, is liable to impair articulation. It is, of course, also possible that if the mechanical agitation of the diaphragm from violent impulses given to the air in speaking is considerable, the diaphragm

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may tend to vibrate for a brief period at a rate dependent upon its own physical condition, which effect, if produced, will, of course, be deleterious.

Cross-Q. 66. If the Blake transmitter, which was attempted to be used November 15, 1882, in connection with the tests here in this office, is now accessible, will you please examine it and state what is its present condition and point out any particulars in which it is obvious to the eye that the instrument has suffered deterioration since it was made?

[*Same objection.*]

Ans. I do not know whether the instrument is accessible, or whether it has been repaired since the date of those experiments. As far as I can recollect, I have had no occasion to use it since myself. At the time of the experiment the fact that it did not transmit speech successfully, even with an ordinary Bell receiver, was explained, as I have already said, by the fact that the rubber on the dampening spring was partly removed. This, of course, from the construction of the Blake transmitter short-circuited the microphone, and for this obvious reason rendered it incapable of serving as a transmitter. From my recollection of the instrument I do not think that there was any other deterioration so great as to make it evident to the eye that it would not work very well.

Cross-Q. 67. Referring to the brass cone instruments, Nos. 57 and 58, which have been put in evidence in connection with your deposition here at this time, will you please measure and state on the record the dimensions of the several operative parts thereof, and the distances between the armatures and core of the electro-magnets?

Ans. The measurements are as follows, as nearly as I can give them without taking the instruments to pieces, and with the only scales which I have at hand:

Diameter of membrane of transmitter, No. 57, ...	$3\frac{3}{16}$ inches.
Slant height of cone "	$4\frac{1}{8}$ "
Length of core of electro-magnet, (including washers,) . . .	$1\frac{15}{16}$ "
Length of armature of transmitter, ...	$1\frac{7}{8}$ "
Breadth " "	$\frac{7}{16}$ "
Thickness " "	$\frac{3}{40}$ "
Diameter of open end of "	$5\frac{1}{4}$ "

The present distance of the armature from the core of the transmitter is, as nearly as I can readily measure it, $\frac{1}{16}$ of an inch, but when the current was passing about the coils of the electro-magnet, so that its core

was magnetic, the armature of course approached considerably nearer, under the influence of the pull.

The same remark applies to the armature of the receiving instrument, No. 58, which is also at present, as nearly as I can readily measure it, at a distance of a little less than $\frac{1}{16}$ inch from the core.

The dimensions of the various parts of the receiver, No. 58, are substantially the same as those of the corresponding parts of the transmitter, No. 57, the membrane of the receiver, however, being $3\frac{1}{16}$ inches in diameter; and the smaller end of the receiver, which is to be applied to the ear, $\frac{1}{2}$ inch in diameter.

Cross-Q. 68. Please give the diameter of the cores, the length and diameter of the helices, the size of the helix wire, and the resistance of the coils.

Ans. The diameter of the cores is $\frac{12}{32}$ inch. The diameter of the coil is (as nearly as I can measure it with the instruments that I have) $1\frac{5}{32}$ inches. The length of the coil is $1\frac{15}{32}$ inches. I have no wire gauge at hand. The diameter of the wire is, however, about $\frac{1}{60}$ inch. I have not measured the resistance of the coils myself, but understand it to be about $9\frac{1}{2}$ ohms in each.

Cross-Q. 69. Mr. Storrow has now brought in the old Blake transmitter which was attempted to be used November 15, 1882; will you please look at it and see if it contains any marks by which you can approximately determine its age?

[*Objected to as immaterial and as new matter.*]

Ans. The number of the instrument is 7003; I see no other apparent means of fixing the date.

Cross-Q. 70. How and why are the instruments numbered, and what date is approximately indicated by the number 7003?

[*Same objection.*]

Ans. The instruments are the property of the Bell Telephone Company, and are, as I understand, numbered consecutively in the order of their production. I understand that the number of the old Blake transmitter under consideration shows that it was probably issued during the summer of 1879.

Cross-Q. 71. What is the number of the Blake transmitter, No. 60, that was introduced in evidence by Mr. Storrow in your direct examination?

[*Same objection.*]

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Ans. No. 124,709. Mr. Storrow now informs me that this was issued about January 1, 1883. Mr. Storrow also informs me that on July 1, 1879, a little more than seven thousand Blake transmitters had been issued.

Cross-Q. 72. Will you please look at the old Blake transmitter No. 7,003, and state what letters and figures are inscribed upon its exterior, besides the number 7,003?

[*Same objection.*]

Ans. On the side of the instrument, immediately over the number, are the words:

"Patented
March 7, 1876,
Jan. 30, '77.
Other patents applied for."

On the front of the box above the mouthpiece are the words:

"Property of
National Bell Telephone Co."

And below the mouthpiece:

"Blake Transmitter."

Cross-Q. 73. Please answer the same question as to the new Blake transmitter No. 124,709, (complainants' exhibit 60.)

[*Same objection.*]

Ans. On the side:

"Patented
Mar. 7, 1876,
Jan. 30, 1877,
July 15, 1879,
Nov. 11, 1879,
Dec. 16, 1879,
Oct. 10, 1871,
Apr. 30, 1878,
Dec. 9, 1879,
Dec. 14, 1880,
Aug. 2, 1881,
Nov. 29, 1881,
Nov. 29, 1881,
Nov. 29, 1881,
Nov. 29, 1881,
Dec. 6, 1881.

Other patents applied for.
Edison Carbon Telephone."

On the front:

"Property of
American Bell Telephone Co.
Blake Transmitter,
124,709."

The number of the instrument is also stamped on the back.

Cross-Q. 74. In the Blake transmitters here present, Nos. 7,003 and 124,709, there appear to be certain springs bearing against the back side of the diaphragm with greater or less degree of pressure. Will you state the number and arrangement of those springs, and the degree of pressure with which they bear against the diaphragm, as nearly as you can convey your idea in language?

[*Same objections.*]

Ans. The diaphragm is held in place by the very short piece of thick sheet brass at one side, which is very rigid, and by the dampening spring on the opposite side, which presses against the diaphragm with moderate force. I have no means at hand for ascertaining, with any accuracy, what is the pressure upon the diaphragm exerted by these springs.

Besides these, the platinum and carbon buttons, which, form the microphone, are carried upon light springs, and are so arranged, in connection with an adjusting arm and screw, that the platinum button presses lightly against the diaphragm.

Cross-Q. 75. The sum of all this spring pressure against the diaphragm must be considerable, and yet it does not prevent the diaphragm from properly executing the vibrations necessary to the transmission of articulate speech; am I not correct in these statements?

[*Same objections.*]

Ans. The diaphragm is certainly not prevented from executing such vibrations. It is hardly subjected, however, to what one would naturally call a considerable pressure, for a very slight pressure of the finger against the diaphragm will cause it to yield and move through a noticeable distance, one sixteenth of an inch or more.

Cross-Q. 76. The spring pressure upon the back of the diaphragm holds the latter in place, does it not?

[*Same objections.*]

Ans. It does.

Cross-Q. 77. If the instrument be laid on its back so as to throw the weight of the diaphragm entirely upon the springs, their pressure is still sufficient to support it and hold it to its seat, is it not?

[*Same objections.*]

Ans. It is.

Cross-Q. 78. You made an affidavit in the moving papers for preliminary injunction in this suit, did you not?

Ans. I did.

Cross-Q. 79. Please produce a copy of that affidavit, in order that it may be put in evidence.

Ans. I do so.

[*The affidavit is put in evidence as Exhibit Cross Affidavit.*]

Cross-Q. 80. Reference was made, during your examination-in-chief, to the photo-lithographed Fig. 7, of Bell's patent of March 7, 1876, and to the full-sized Fig. 7, as shown in Bell's application for said patent, and to the difference between the dimensions shown in the photo-lithograph and the dimensions shown in the full-sized drawing; will you please state in what proportion the drawing was reduced by the photo-lithographing process?

Ans. The original drawing is about half as large again as the photo-lithographed reproduction in the patent.

Cross-Q. 81. That reduction holds good for every part of the drawing including the space between the core and the armature, does it not?

Ans. If, as I understand to be the case, the copy of the patent drawing is procured by purely photo-lithographic processes, this must be so.

Direct examination resumed:

Q. Q. 82. Your affidavit has been referred to; have you seen any reason to change any of the opinions you there expressed?

Ans. I have not.

CHAS. R. CROSS.

Attest:

CHAS. H. SWAN,

Examiner.

Complainants' counsel offers in evidence an article on "Telephony by means of the galvanic current," by Philip Reis, in the yearly report of the Physical Society, at Frankfort-on-the-Main, 1860–61, p. 57.

Complainants' counsel also puts in evidence, so far as not already in evi-

dence, the papers which were produced during the cross-examination of the defendants' witnesses and the defendants' witnesses cross-examined upon, and gives notice that at the hearing complainants will refer to the papers and affidavits filed on the motion for preliminary injunction, not as evidence of the facts, but as part of the history of the case.

Complainants here close their testimony in reply.

It is agreed that the defendants shall have such time as may be proper for evidence in rebuttal.